PROGRESS OF THE
EXPEDITION TO
CENTRAL AFRICA

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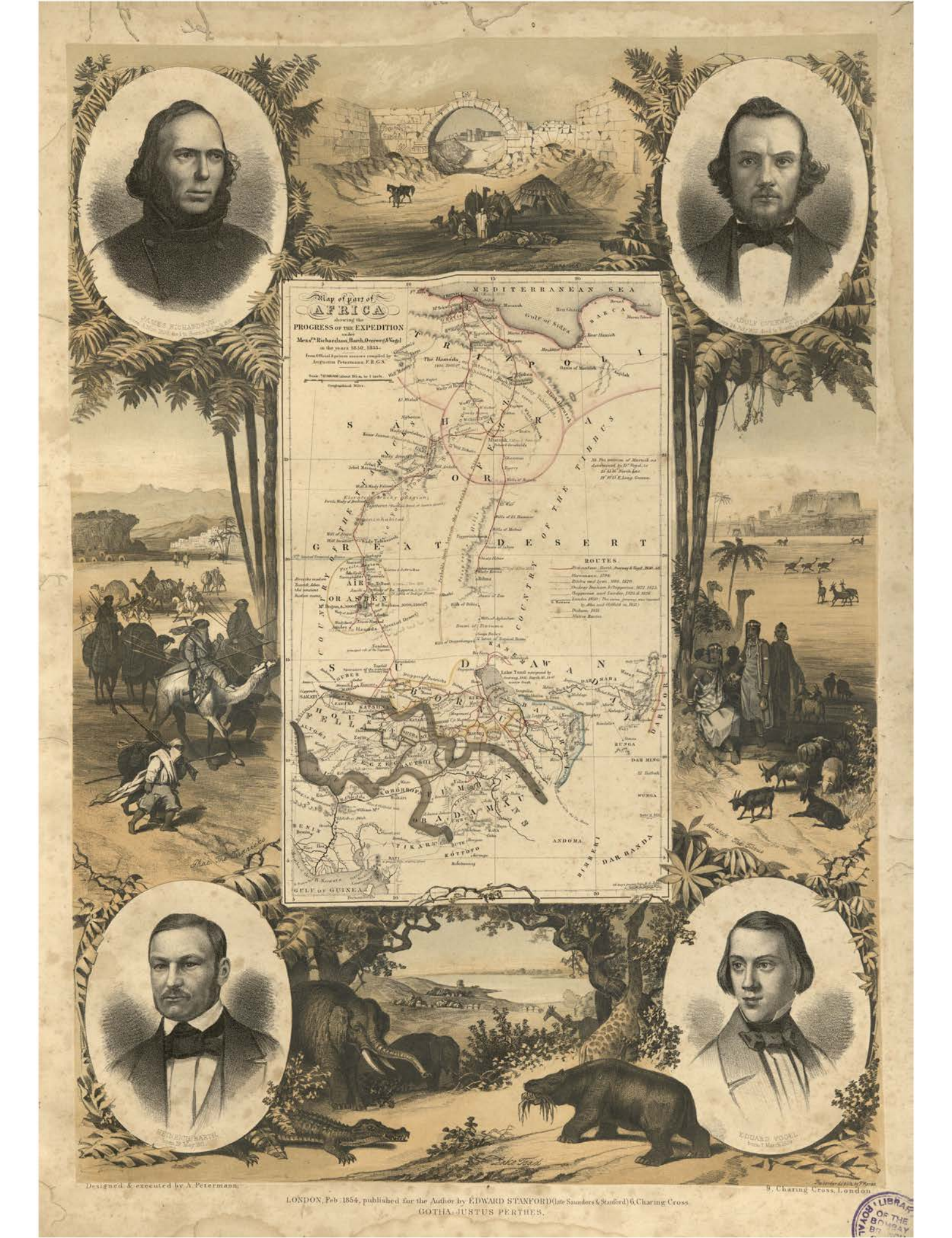
Map of part of
AFRICA
showing the
PROGRESS OF THE EXPEDITION
under
Mess.rs Richardson, Barth, Overweg & Vogel
in the years 1850-1855.
From Official & private sources compiled by
Augustus Petermann, F.R.G.S.
MEDITERRANEAN SEA
Gulf of Sidra
BARCA
TRIPOLI
The Hamáda
SAHARA
GREAT DESERT
COUNTRY OF THE TIBBUS
COUNTRY OF THE TUAREG
AIR or ASBEN
SOUDAN
Lake Tsad
BORNU
KANEM
BAGHIRMI
SOKOTO
HAUSSA
ADAMAWA
MANDARA
BAGIRMI
DARFOUR
KUNGA
DAR MING
WUNGA
ANDOMA
DAR BANDA
BINNERI
BENUE
KOTTOTO
GULF OF GUINEA
ROUTES
Richardson, North, Overweg & Vogel, 1850-55.
Hornemann, 1798.
Ritchie and Lyon, 1818, 1820.
Oudney, Denham & Clapperton, 1822-1825.
Clapperton and Lander, 1825-8, 1830.
Lander, 1830. (The entire journey was performed by Allen and Oldfield in 1841.)
Denham, 1851.
Native Routes.
Lake Tsad surveyed by Overweg, 1851, March 27, 28 & 29 winter track.
Mr. Vogel's position of Murzuk as determined by Dr. Vogel, in 27° 54' 30" North Lat. & 14° 57' 45" East Long. from Greenw.
Mr. Barth's position of Murzuk as determined by Dr. Vogel, in 27° 54' 30" North Lat. & 14° 57' 45" East Long. from Greenw.
JAMES RICHARDSON
ADOLF OVERWEG
HEINRICH BARTH
EDUARD VOGEL
Designed & executed by A. Petermann.
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GOTHA, JUSTUS PERTHES.

BY AUTHORITY OF HER MAJESTY'S FOREIGN OFFICE.

AN ACCOUNT

OF THE

PROGRESS OF THE EXPEDITION

TO

CENTRAL AFRICA,

PERFORMED

BY ORDER OF HER MAJESTY'S FOREIGN OFFICE,

UNDER

MESSRS. RICHARDSON, BARTH, OVERWEG & VOGEL,

In the years 1850, 1851, 1852, and 1853.

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CONSISTING OF

MAPS AND ILLUSTRATIONS,

WITH

DESCRIPTIVE NOTES,

Constructed and compiled from official and private materials

BY

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LONDON,
PUBLISHED FOR THE AUTHOR BY E. STANFORD, 6, CHARING CROSS;
GOTHA: JUSTUS PERTHES.
1854.

SUMMARY OF THE PROGRESS

OF THE

EXPEDITION TO CENTRAL AFRICA,

PERFORMED BY ORDER OF HER MAJESTY'S GOVERNMENT,

UNDER

MESSRS. RICHARDSON, BARTH, OVERWEG, AND VOGEL,

In the years 1850, 1851, 1852, & 1853.

INTRODUCTION.

TOWARDS the end of February 1853, dispatches were received by Her Britannic Majesty's Government, from Dr. Barth at Kuka in Bornu, comprising, among other documents, a map showing some of the most important results of the journeys of the Expedition in Central Africa. By order of the Earl of Clarendon, the author constructed a Map, based on that of Dr. Barth, and made considerable additions from other documents sent home by the Expedition at different times, and placed at his disposal by the kindness of Lord Clarendon. Dr. Barth, from having survived both his companions, Mr. Richardson and Dr. Overweg, and having kept a very complete and regular journal, and otherwise transmitted to paper a vast amount of geographical information, possesses the only complete record of the results of this Expedition; and it is obvious that, whatever may be published relating to it before Dr. Barth's return, or without his journals and papers, must necessarily be of a fragmentary character. Such is the case with the above map. Yet, with all the imperfections and blanks, which may hereafter be rectified and filled up, it appeared so important a document,—laying open, as it does, so extensive a region of the hitherto unknown interior of Africa,—that, rather than withhold it from the public for an uncertain number of years for the sake of greater completeness, the Earl of Clarendon sanctioned its immediate publication, together with that of a smaller map, extending from the Mediterranean to the Gulf of Guinea, and giving a general view of the routes of the travellers, and the various countries visited by them.

In addition to the maps, the author received permission to accompany them by some letter-press, containing a summary of the progress of the Expedition. Hence the present notes.

The author had two reasons for editing and publishing this work. He wished, in the first place, to do whatever little he could to satisfy, in some degree, the curiosity and anxiety felt, and the interest taken, by the public in this Expedition; and he was also desirous to fulfil what he considered his duty towards the members of the Expedition, by bringing the result of their labours to public notice as early as possible. These gentlemen have, every one of them, from first to last, been possessed of the most laudable spirit and zeal for their vast undertaking. They have, year after year, braved the greatest difficulties and dangers, with the most heroic endurance and undiminished courage, solely for the interest of science, civilization, and commerce. Two out of three have already sacrificed their lives in the cause; and all the survivor asks, in risking his own life, is that interest may not cease to be taken in the enterprise at home. For this reason to undertake a work which cannot but be of a fragmentary character, becomes a pleasure and a source of gratification to the author, when, under all other circumstances, it could only have been a distasteful task; and he craves that indulgence which every author must be anxious to obtain, who knows that his work will, on a future day, be superseded by a much more perfect and complete one. God grant that Dr. Barth and Dr. Vogel may return in health, to give to the world an account of their discoveries and researches in the full and unabridged extent!

The following notes have been divided into sections, corresponding to what may be considered distinct and separate journeys, viz.:—

1. Excursions of Dr. Barth and Dr. Overweg to the Gharian Mountains, 2nd to 24th February, 1850.
2. Journey of Messrs. Richardson, Barth, and Overweg, from Tripoli through the Sahara to Damergu, on the borders of Sudan, 23rd March 1850, to 11th January 1851.
3. Mr. Richardson's journey from Damergu to Ungurutua, 11th January to 4th March, 1851.
4. Dr. Barth's journey from Damergu to Kuka *viâ* Kano, 11th January to 2nd April, 1851.
5. Dr. Overweg's journey from Damergu to Kuka *viâ* Guber and Mariadi, 11th January to 7th May, 1851.
6. Dr. Barth's journey to Yola, 29th May to 22nd July, 1851.
7. Dr. Overweg's exploration of Lake Tsad, 18th June to 8th August, 1851.
8. Journey of Dr. Barth and Dr. Overweg to Kanem, September and November, 1851.
9. Journey of Dr. Barth and Dr. Overweg to Musgo, 25th November 1851, to 1st February 1852.
10. Dr. Barth's journey to Bagirmi, end of March to 20th August, 1852.
11. Dr. Overweg's journey towards Yakoba, 24th March to 22nd May, 1852.
12. Dr. Barth's proceedings since August 1852.
13. Dr. Vogel's journey; departure from England in February 1853.
14. Appendix.

1850.

Origin of the Expedition.

In the Summer of 1849, Mr. James Richardson, who had previously, in 1845 and 1846, explored a portion of the Northern Sahara, on a tour from Tripoli to Ghadamis, Ghat, and Murzuk, received the sanction of Her Britannic Majesty's Government to proceed to Central Africa, on a political and commercial mission. Two German gentlemen, Dr. Barth and Dr. Overweg, volunteered to accompany Mr. Richardson in the character of scientific observers, on condition that the English Government should defray part of their expenses. This proposition received the sanction of Her Majesty's Government, and was eagerly accepted by Mr. Richardson. It was arranged that these two travellers should receive £200 for their travelling expenses as far as Lake Tsad, and £200 more for their further journeys. From the Geographical Society at Berlin they received £300, from the King of Prussia £150, and from other private subscriptions a like sum,—in all, £600 from their own country, in addition to considerable private sums of their own. At the death of Mr. Richardson, Dr. Barth was appointed in his place by Her Majesty's Government, from which the two travellers received ever since the most generous and liberal support, thanks be to the successive Secretaries of State,—Lord Palmerston, Lord Granville, Lord Malmesbury, Lord John Russell, and Lord Clarendon. Dr. Barth, by profession an historian, antiquarian, and philologist, and Dr. Overweg, geologist and naturalist, had been recommended for the service by the first scientific men at Berlin,—Baron Humboldt, Professors Ritter, Rose, Encke, and others.

By the end of 1849 the three travellers left Europe on route for Tripoli, Mr. Richardson arriving at Tripoli on the 31st January 1850, while his two companions had pushed on before him.

I. EXCURSION OF DR. BARTH AND DR. OVERWEG TO THE GHARIAN MOUNTAINS, 2ND TO 24TH FEBRUARY, 1850.

The Gharian Mountains.

Dr. Barth and Dr. Overweg leaving Mr. Richardson at Tripoli to make the final preparations for their journey, explored the mountainous regions which lie about 50 miles south of that place, and extend 150 miles in a direction from W.S.W. to E.N.E. They do not form a range of mountains, but the northern edge of a great table-land, the average elevation of which is 2,000 feet above the level of the sea. Four divisions are distinguished, ranging from west to east thus: the Yofran, or Jebel, mean elevation 2,000 to 2,200 feet; the Gharian, mean elevation, 2,200 to 2,300 feet; the Tarhonah, 1,000 feet; and the Mesallata, the easternmost, gradually descending to the level of the sea at the ruins of Leptis. The Yofran, lying southwest from Tripoli, is intersected by the route to Ghadamis. Its highest point is the mountain on which the village of Tagerbust and the Castle of Yofran stand. Geologically, it consists in the lowest strata of the Wadis, of variegated marl and gypsum, above which follow sandstone, marl, and especially limestone. No traces were discovered here of volcanic formation; which appears only in the Gharian mountains,—namely, that portion of the range which is situated due south from Tripoli. The mighty Mount Tekut, 2,800 feet high, and situated near the Gharian Pass, is a fine extinct crater. In the third group, the Tarhonah mountain, S.E. from Tripoli, volcanic formation again entirely disappears. The table land and higher parts of the Yofran are of a stony and arid character; and it is only in the Wadis that dates, olives, and figs are cultivated. On the other hand, the surface of the Gharian district consists of a rich red loam, in the highest degree fertile, and is covered with the most luxuriant plantations of olive trees and fields of saffron. It is in this rich loam that the inhabitants have dug their subterranean dwellings. The Tarhonah district is characterised by the general cultivation of corn, and by the abundance of ruins of Roman settlements, towers, and monuments. The district of Mesellata, again, is rich in olive plantations, more so than any other region in the regency of Tripoli.

Its geological and physical features.

1850

The explorers went first in a south-westerly direction on the route to Ghadamis, reaching as far as Riaina, whence they turned east, following the range in a zigzag till they reached the shores of the Mediterranean at Cyniphus, beyond the ruins of Leptis. The season in which they explored that region was the most favourable they could have selected, and they found the vegetation in full bloom, while the temperature was cool and pleasant. Indeed, at times they experienced an unexpected degree of cold: on one day, the thermometer, before sunrise, being as low as 26° Fahr., and on the 2nd and 3rd of February the snow obliged the travellers to remain in their tents. The winter seems to have been unusually severe in those regions. In Ghadamis, snow fell several times, and at Sukna, it came down in such quantities, that the inhabitants apprehended the destruction of their houses; even at Murzuk, ice of the thickness of a finger was found on small pools of water. A detailed map and report of these explorations were transmitted at the time to the Foreign Office.

Climate.

II. JOURNEY OF MESSRS. RICHARDSON, BARTH, AND OVERWEG, FROM TRIPOLI THROUGH THE SAHARA TO DAMERGU, ON THE BORDERS OF SUDAN, 23RD MARCH 1850, TO 11TH JANUARY 1851.

After the return of the travellers to Tripoli, a further delay of some weeks was caused, principally by the bad weather cutting off all communication with Malta, whence certain things belonging to the outfit of the expedition were expected. Among these was the boat intended for the navigation of Lake Tsad. For this purpose, a beautiful wherry had been constructed by the direction of the Admiral at Malta, broad in the beam, and as light as a cork on water; it was sent in two sides, each of which had to be sawed into two pieces, which were carried slung in nets upon a couple of powerful camels.

The boat for Lake Tsad.

At length Barth and Overweg started on the 23rd March 1850, in advance of Mr. Richardson, who left Tripoli on the 30th and joined his companions the next day in Wady Mejneen, where they had pitched their tents. From that place the united expedition proceeded southwards on the 3rd of April. The great caravan had departed before them; but the party formed a small caravan of itself, having about 40 camels, laden with their effects and merchandize. It comprised, besides the three travellers, the interpreter, Yusuf Moknu, two chaouches or Arab cavaliers, and several servants, as well as a number of free blacks from Tunis, some married, others single, who were to return to their homes in Sudan, Bornu, and Mandara under their protection. The great assistance which was received by the travellers from the British Consul in Tripoli, added not a little to the favourable and promising circumstances under which the expedition started.

Composition of the expedition.

1850.

General direction of the route through the Sahara.

The route followed by the expedition from Tripoli to Lake Tsad, was not the direct road viâ Murzuk and Bilma through the country of the Tibbus, but one from Murzuk, deviating greatly westwards and extending through the Tuarick country, with the kingdom of Air to Kano, the great mart of Sudan. The object of this deviation was to explore countries never before visited by Europeans. Even as far as Ghat, routes leading through the more unknown regions were selected. Thus their route from Tripoli to Murzuk lies west of the one by Beniolid and Sukna, commonly used, and selected by Ritchie, Lyon, Oudney, Denham, and Clapperton. The expedition entered the elevated regions south of Tripoli by the Gharian Pass, near which is Mount Tekut. As far as the Well of Taboniah, situated at the foot of the northern edge of the Hamáda, many deep wadis intersect this table land, and the ruins of several Roman monuments and columns were discovered by the travellers. The principal feature of this tract of country is the pleasant Oasis of Mizda, inhabited by people of the Arab race. Its beauties consist of about 300 palm trees, half-a-dozen diminutive fields of barley, and a few onion beds in the little gardens, which are partially shaded by some small trees.

Roman ruins at Ghareeah.

Near the well of Taboniah, and situated east of it, on the edge of the table-land of Hamáda, is the village Ghareeah, with a small plantation of date trees. At and near this place Dr. Barth discovered a splendid mausoleum and many Roman ruins. Among these the sketch given in the smaller sheet of this work represents a well-preserved Roman gateway which stands at the northern end of the village, and is still the only passage to it on that side, the place being surrounded by a wall.

The Hamáda.

To the south of Taboniah is the Hamáda, an immense stony desert of 2,000 to 2,500 feet elevation, and extending about 110 geographical miles southwards. As far as the eye can reach, neither trees nor indications of wells are visible, and the scanty vegetation which occurs, is only found here and there in the trifling irregularities of the surface. The ground is covered with small stones, pyramids of which, erected with great labour, serve as road-marks to the intrepid camel-drivers by day, while the Polar star and Antares are their guides by night. After six long days' journey, the expedition reached the southern edge of this table land, which descends in perpendicular walls to the Wady el Hessi. Following the descent for about 60 geographical miles, the travellers came to the Wady Shiati, over another plateau of equally dismal aspect. It is composed of a black sandstone, the disintegration of which forms a dark yellow sand, covering the inequalities of the stony surface, from which stands out prominently the black rock, in high cones of the most fantastic forms, strikingly representing basaltic rocks. The monotony of the dreary black rock was relieved by the yellow sand, without which the whole of Fezzan would be a lifeless wilderness, as it is in the sand that the palm trees grow, and in the Wadis filled with it that the wells are found. In the great Wady of Fezzan the expedition passed through a complete forest of palms, as well as through cultivated fields of wheat and barley. Another small table land was traversed by the travellers, after which they reached Murzuk on the 6th of May 1850.

Mr. Richardson divides the country between Tripoli and Murzuk on the route of the expedition, into the following series of zones, or regions:—

Physical features of the region between Tripoli and Murzuk.

1st Region. This includes the sandy flat of the suburbs of the town of Tripoli, with the date-palm plantations and the sand hills contiguous.

2nd Region. The Mountains, embracing the undulating ground on both its northern and southern sides, the latter being covered with olive and fig plantations. Here the Barbary vegetation is seen in all its vigour and variety. This may also be emphatically called the region of rain.

3rd Region. The limestone hills and broad valleys, gradually assuming the aridity of the Sahara as you proceed southward, between the town of Kalcebah and Ghareeah; the olive plantations and corn fields disappear entirely in this tract.

4th Region. The Hamáda, an immense desert plateau, separating Tripoli from Fezzan.

5th Region. The sandy valleys and rocks between the Oases of Hessi and Shiati, where herbage and trees are found, affording food to numerous gazelles, hares, and the wadan.

6th Region. The sand between Shiati and El-Wady (W. Gharbi), piled in masses, or heaps, extending in undulating plains, and occasionally opening in small valleys with herbage and trees.

7th Region. The sandy valleys of El-Wady (W. Gharbi), covered with forests of date-palms, through which peep a number of small villages.

8th Region. The plateau of Murzuk, consisting of shallow valleys, ridges of low sandstone hills, and naked flats or plains, sometimes of sand, at others covered with pebbles and small stones. The regions beyond the Gharian Mountains are visited only by occasional showers, or are entirely without rain, the vegetation depending upon irrigation from wells.

Murzuk.

The travellers were compelled to make a long stay at Murzuk, as they were awaiting the arrival from Ghat of the Tuarick escort, headed by Hatita, the well-known Tuarick chief, who calls himself "the friend of the English," from having escorted Oudney and Clapperton to Ghat.

Murzuk and its environs are described by the travellers as a dreadful "sand pit," completely surrounded with sand hills; which, coupled with the pestilential evaporations of the Salt Lakes near the town, render the climate so unhealthy as frequently to prove fatal to Europeans. Happily none of the members of the expedition were affected by it. Murzuk, the seat of the Pashalic of Fezzan, is, notwithstanding its unfavourable climate, a rising town. The population, which is very much mixed, numbers about 2,000 souls, the garrison consisting of 430 men, of whom about one-half are Fezzanees, 20 or 30 Turks, and the residue Arabs or Moors.

Geographical notes on Fezzan.

The population of the whole Pashalic does not exceed 26,000 souls, scattered about in little oases over a vast extent of country, the whole being divided into ten districts. The principal district is El-Hofrah, containing the capital. It is here and there besprinkled with beautiful gardens, in which are cultivated, besides the date-palm, several of the choicest fruits that grow on the coast, as figs, grapes, peaches, pomegranates, and melons. Two crops are obtained in the year; in the spring, barley and wheat are reaped, and in the summer and autumn, Indian corn, ghussub, and other kinds of grain. The military force by which the Turks hold possession of this vast but thinly-peopled territory, is the very inconsiderable number of 630 men. The whole amount of revenue collected by the government is estimated at 50,000 mahboubs per annum. From October to January there is a large annual market, at Murzuk. One general caravan comes from Bornu and Sudan every year during the winter season, and other caravans also congregate here from Egypt, Ben Ghazi, Tripoli, Ghadamus, Ghat, and Tuat. From 40,000 to 60,000 Spanish dollars is the value of the merchandise that usually changes hands during the great mart. The principal articles of traffic from the interior are slaves, senna, and ivory. Bullocks' and goats' skins, and a small quantity of ostrich feathers, are also in the market. The gum trade has lately been introduced by the British Consul, and 100 cantars per annum are already collected from the tholukh trees.

From Murzuk to Ghat.

Drs. Barth and Overweg being fairly tired out with waiting at Murzuk, left that place on the 12th of June, in company with a caravan of Tanelkum Tuaricks, Mr. Richardson following on the 25th of June, and rejoining his companions on the 2nd of July. The journey from Murzuk to Ghat, generally accomplished in 12 days, occupied the travellers 36, owing partly to the delay caused by Hatita, partly to the slow rate of travelling of this old and decrepit man. The travellers were, however, compensated by the

Ancient rock-sculptures.

discovery of some extremely curious rock-sculptures in the Wady Telissareh, which is situated about mid-way between Murzuk and Ghat. One of these sculptures consists of two human bird-and bull-headed figures, armed with spears, shields, and arrows, and combating for a child. The other represents a fine group of oxen going to a watering-place, most artistically grouped and skilfully executed. In the opinion of the travellers, the two works bear a striking and unmistakeable resemblance to the sculptures of Egypt. They are evidently of a very high antiquity, and superior to numerous other sculptures of more recent date found at the same time, in which camels generally formed the principal object. They most probably relate to a period of ancient Libyan history when camels were unknown in that part of Africa, and oxen were used instead.

Beyond Telissareh the road descends into the Wady Talya, through a pass of a most extraordinary nature. It seemed to the travellers to have been purposely cut out of the solid rock for the use of man, and reminded them of a railway excavation. As they advanced, it assumed the form of a cave, slightly open at the top,—narrow, winding, and furnished with seats on either hand. A dim light came from above. Now and then the pass became quite a tunnel, but the concave roof being high enough for any camel to pass. Little openings, containing groups of tholukh, now and then made a pleasant impression, but the general aspect of the pass was horrible and desolate.

At Sevilalous, the road, till then from east to west, suddenly turned almost due south, in the direction of the celebrated Kasar Janoon or Palace of the Demons, a small range of hills composed chiefly of slate-marl, and most curiously shaped, having the appearance of ruinous cathedrals and castles. This region is held in the most superstitious dread by the inhabitants, who never go near it. It had well nigh cost the life of Dr. Barth, who, on the caravan arriving on the spot, with Dr. Overweg determined to visit this curious group of hills. As they could procure no guide or companion, they set off alone, while Mr. Richardson pitched his tent at the nearest well. The day wore on, it blew gales of wind, and none of them returned. At last towards the evening Dr. Overweg returned, but without his companion, from whom he had separated without seeing him again. Great fears began to be entertained that an accident had befallen the latter. Search was commenced just before sunset, and continued up to midnight, but in vain. At daybreak, the search was more vigorously resumed, and a considerable reward was offered as a stimulus to the Tuaricks, but the day wore on without result. Just before sunset, however, the joyful intelligence was brought to the camp, that Dr. Barth had at last been discovered, still alive, and even able to speak. One of the Tuaricks had found him about eight miles from the camp, lying on the ground, unable to move. For 24 hours he had remained in the same position, perfectly exhausted with heat and fatigue. On seeing his deliverers, he could just muster strength to say, "Water, water!" He had finished the small supply he had taken with him the day before at noon, and had from that time suffered the most horrible tortures from thirst. He had even drunk his own blood: 28 hours in the Sahara without water! The Tuaricks could scarcely at first credit that he was alive; for their saying is, that no one can live more than 12 hours when lost in the desert during the heats of summer. The Doctor, however, being of robust constitution, was well enough the next day to mount his camel, and proceed with the caravan. The travellers arrived at Ghat on the 17th of July.

1850.

Adventure of Dr. Barth in the Kasar Janoon.

Respecting the physical geography of the region between Murzuk and Ghat, the road from the former place was found to ascend as far as the boundary of Fezzan, which is beyond Wady Telissareh, whence it descended into the deep Wady Talya, which runs from north to south, in a direction parallel with Wady Ghat, being separated from it by a range of steep hills, the Wareerat Mountains. This range, as well as the culminating portion of the table-land to the east, consists, like that found between Tripoli and Murzuk, of black sandstone, with substrata of limestone and marl. The summits of these sandstone ridges form a pointed, sharp-edged, knife-like crest, which it is out of the question to think of ascending or proceeding along. Of fossil remains, orthoceras, brachyopoda, &c. were found.

Physical features of the region between Murzuk and Ghat.

With respect to the botanical character of this part of Africa, a greater abundance of gramineous plants was found in the rich Wadis than had been previously met with. Of trees, the talha and letheb had taken the place of the date-palm, which was not seen beyond Tessowa, about two days journey west from Murzuk. Water was plentiful in the wells: even pools, remaining from the last rains, were met with in some of the Wadis which are generally dry. Flocks of "poulets de Carthage," attracted by the water, so precious in these regions, as well as numbers of small birds, gazelles, hares, foxes, and dormice, enlivened the surrounding country. In the larger Wadis near Ghat, numerous traces of wild asses were noticed.

Oasis of Ghat.

Ghat is situated on the spur of a lofty hill, overlooking it from the north. It is surrounded by miserable walls not more than 10 feet high, pierced by six weak gates. The houses are not whitewashed, like those of Moorish towns, but retain the dirty hue of the unburnt brick and mud with which they are built. A single minaret worthy the name, and one large building used as a general lodging-house, rise above the flat roofs of the rest of the town. Some few palm-trees bend gracefully here and there; but in general, the groves of the oasis are a little distant from the walls. There is a suburb of some 50 houses of stone and mud; and a number of huts, made of straw and palm-branches. The whole oasis is not more than three miles in extent; the gardens produce only a little wheat, barley, and ghussub, with some few kinds of fruit. Good water is supplied by the wells; but all the palm vegetation is stunted. From the hill that overlooks the town, a fine view is to be obtained of the little oasis and the vast extent of desert that encircles it on every side. Far to the south wave in the air the summits of the palm-groves of Barket, on the way to Air. To the west, hills and ridges succeed one another to the horizon, and to the east, above a line of glittering sandhills, rises the unbroken wall of the Warcerat range,—"the rampart thrown up by the demons to protect their favourite Tuaricks from the inroads of the conqueror." The contrast of the bright green of the oasis with the stony waste beyond is striking; and when the sun sheds its bright rays over the scene, it may really be called beautiful. Ghat is but a small town, situated in the territory of the Azgher Tuaricks, principally inhabited by people of Moorish origin, but mixed and known as Ghateen.

At Ghat, the travellers remained a week: which time was by no means one of rest or recreation, as they were continually harassed by the greedy demands of the chiefs, and by the fanaticism of the inhabitants: so much so, indeed, that they had but few opportunities of exploring the town and surrounding country, except when their medical assistance happened to be required. Even old Hatita proved a faithless "friend of the English." On the 25th of July the expedition left Ghat.

Departure from Ghat.

"The departure from Ghat," so writes Mr. Richardson, "was, for the most of us, an exciting moment. So far I had considered myself comparatively on familiar ground; for although I had followed different routes, the great points of Murzuk and Ghat were well known to me. Now, however, we were about to enter upon a region totally unknown, of which no authentic accounts from eye-witnesses, unless we count the vague reports of natives, had ever reached us: valleys unexplored; deserts unaffronted; countries which no European had ever surveyed. Before us, somewhere in the heart of the Sahara, raised into magnificence perhaps by the mirage of report, was the unknown kingdom of Air, of which Leo Africanus hints something, but the names of whose great cities are scattered, as if at hap-hazard over the maps, possibly hundreds of miles out of their right position. What reception shall we meet with in that untried land? In what light will its untravelled natives—fierce from ignorance and bigotry, regard this mission of infidels, coming from latitudes of which they have never dreamed, with objects unappreciable and perhaps hostile? Will nature itself be hospitable? Are there no enemies in the climate, no perils peculiar to the seasons? These questions occupied my mind as the caravan wound between the last palm-groves of Ghat; and my camel, resuming its swinging march, went away with its neck advanced like a bowsprit over this desert sea, which might be scattered with hidden dangers at every step."

The travellers first passed Barket, a considerable town, surrounded with palm-trees and gardens, and situated in a pleasant and picturesque piece of country, nowhere exceeded in beauty in the whole region yet traversed. On the 27th of July the expedition arrived at the well of Akuru, and was there joined by a caravan of Kelowi Tuaricks, under whose protection they were to proceed as far as Tin-Tellust, in Air, the residence of the Kelowi prince. The scenery continued to be very varied, so different from the vulgar notions of a desert, or level expanse of sand. There were frequent ascents and descents, ravines and rocky plateaus. On the 30th of July they came to a small lake enclosed within immense rocks, called Aggeri Water, which is solely produced by rain. Here the expedition began to be harassed by rumours of pursuing Tuaricks. On the 4th of August the Wady and well of Falesselcs was reached. Here they stayed two days to refresh themselves, as they were greatly fatigued by the long days' marches which they had made ever since leaving Ghat. They entered now upon a more elevated rocky region, an extensive Hamáda, uninhabited for about 300 miles in a southerly direction. Their course was through heaps and groups of rocks and narrow shallow Wadis; in some directions ridges of small rocks; in others isolated masses of conic form. Few animals were met with. The Wady of Arukam is an immense hollow, full of trees and hasheesh, and surrounded on all sides by an amphitheatre of savage-looking mountains—great stony wells made hideous here and there by crags and ravines, and piled away in shattered magnificence. Mr. Richardson, who has explored a great portion of the Desert, pronounced this Wady the grandest desert prospect he had yet seen. It contains magnificent tholukhs 30 to 40 feet high, and two new species of trees, natives of Bornu. Wady Arukam, well supplied with water and much shaded, is in every respect a desirable resting-place for caravans.

Character of the desert.

Uninhabited region of 300 miles in width.

The travellers next came to Wady Tajetterat, where they found, for the first time, the senna plant, which has its native soil further to the south in Air.

Northern limit of the Senna plant.

On the 15th of August, not far from the Well of Aisou, the travellers experienced the first drops of Sudan rain, and a complete Sudan atmosphere, the clouds having a vermillion tinge, and the air being hot and clammy. The next day a terrific tempest was experienced, with thunder and lightning, and so violent a shower of rain that the travellers got quite wet through almost in an instant. On the 17th of August, the Aisou, or the Seven Wells, were reached. Here reports of pursuing Tuaricks again alarmed the caravan; but the enemy was outstripped, and the travellers safely reached the borders of the kingdom

Northern limit of the Tropical rains.

of Air at Taghajit, hoping to be hospitably received by its inhabitants, and to rest after the fatigues of a forced march. But they were sadly disappointed.

Enter the kingdom of Air.

"As we advanced, on the 21st of August, along the plain, between the granite rocks, trees and flowers starting up thicker from the ground to greet our approach, our guides told us that we were at length entering the inhabited districts of the kingdom of Air or Asben, as it is indifferently called. This announcement at once substituted pleasurable for uneasy sensations. We thought no more at all of pursuing robbers, and gave ourselves up to the delight which always attends upon difficulties vanquished. The name of the first district is Taghajit. We expected to behold groups of inhabitants coming joyfully to welcome us. Our imaginations had adorned the country almost with the colours of home. It was about I p.m. that we crossed the unmarked frontier. Still there were rocks around, their angles softened away by trees, still, wild flowers mingled with the herbage on every side; the heavens were clearing over head, and the sun shed down a warm mantle of rays upon the land; yet there were no signs of life. The silence that reigned, I know not why, introduced ideas of terror in our minds, and we began to gaze anxiously to the right and to the left. We remembered that this region, likewise, was inhabited by Tuaricks, though not of the Haghar tribe. They might be inhospitable, perhaps hostile. All the caravan, by degrees seemed to join in our uneasiness; and when at length, just before we pitched our tent, the cry arose of the 'Tuaricks! the Tuaricks are coming!' it rose as a cry of alarm. Every one snatched up his weapons as a small group approached, and all waited with impatience to learn whether they came as friends or enemies."

Attacked by the Tuaricks.

From this moment they were greatly harassed by the attacks of what would seem to have been the lawless tribes of the border regions, and hordes of all the blackguards of the surrounding districts, in number gradually increasing from 60 to several hundreds. Earnest preparations to repel these attacks were now made by the mission; whose force consisted of about 60 men able to fight. To these, ammunition for twelve shots was distributed. The demand made by the enemy to the caravan, was, that the three Christians should be delivered over to them; but their servants, their escort, and the other members of the caravan remained faithful to the travellers. Several times the enemy challenged the caravan to battle; but when the latter showed a bold front, advanced in a body well armed, and shouted out that they accepted the challenge, the former retired, satisfied with the payment of a ransom. At last, however, the affair became more serious; and before the travellers reached the town of Seloufiyeh, a troop of a hundred men, instigated by the Marabouts, demanded that the travellers should become Moslems, or return by the way they had come, as no infidel had ever passed, or should ever pass through their country.

"This time," says Mr. Richardson, "even our own servants prayed that we would accept the proposition, or seem to accept it, if only for a few days, to deliver ourselves from present danger. My colleagues, and particularly Dr. Barth, indignantly and passionately resisted. For my part, I looked upon the affair with a little more calm, the same thing having occurred to me on a former occasion in the desert. I told our people that we would pay the tribute imposed by the Mahometan law on infidels, or for our passage through the country, or else that we would take our chance and return. Upon this our servants exclaimed, with tears in their eyes, 'To return would be certain death!' There was nothing left for me to do, but to say with my colleagues, that we would wait patiently for death, but that to change our religion was impossible."

Have to pay a heavy ransom.

The Tuarick escort of the travellers remained faithful and firm, and by their negotiations, and by paying a heavy ransom, the enemy agreed to the proposition that the travellers should be taken to Tin-Tellust, to the great sultan En-Noor, who should decide upon their case. On their way to that place, they passed near Timtaghoda, the city of Marabouts. These Marabouts, by assigning to have found the names of the travellers in their books, and other reasons, had determined to receive them with open arms and afford them their protection as far as Tin-Tellust. It was from these persons that they received the first substantial action of kindness in Air, viz. a present of two melons, some onions, and a small quantity of wheat. By a kind treatment the Marabouts, it seems, hoped the Christians would still be converted into Moslems. Heavy rains and floods now delayed the expedition, and even endangered their lives by their unexpected suddenness and magnitude. When the floods were subsiding, however, a strong escort from prince En-Noor, including 31 men mounted, arrived to the great joy of the travellers.

Reach safely Tin Tellust.

Under the protection of this escort, they reached, on the 3d of September, the broad and spacious valley of Tin-Tellust. The town itself is situated in the middle of this valley, with trees here and there interspersed. This place, the capital of the mighty prince En-Noor, on whom life and death of the travellers depended, and on which their minds had naturally dwelt so long, was found to be much less imposing, consisting, as it does, of only about 150 houses and huts, and being in fact nothing but a large village. The travellers pitched their tents upon some sandhills overlooking the entire country. For the first time since many a day they felt themselves quite secure under the immediate protection of En-Noor, who on their arrival sent them a kind message. Still, however, they received nothing in the shape of substantial hospitality, which they were all so much in need of.

Retrospect on the journey from Ghat to Tin-Tellust.

Altogether the journey from Ghat to Tin-Tellust had been a most difficult, dangerous, and fatiguing one. Their progress, during the first fortnight, had been very rapid, as they travelled from 10 to 12 hours *per diem*:—a rate of travelling under an African sun which, coupled with their having to make their various scientific observations on the road, was almost too much for the travellers, who had scarcely time to recruit their strength with the necessary rest and sleep. The camels, too, began to show symptoms of exhaustion: so that the latter portion of the journey had to be performed at a less rapid rate.

Physical features of that region.

The route from Ghat to Air is described by Dr. Overweg as a mountain path, leading over ridges, table-lands, and deep-cut rocky valleys. Wherever the wadis become broader, and, through the agencies of rain are covered with disintegrated rocks and sand, they show a scanty vegetation of grass and trees. The geognostical character of the country is here of much greater interest. From Murzuk to Ghat, and five days to the south beyond Ghat, the prevailing formation consists of sandstone of various colours,—with, throughout, the same petrographical aspect of the rocks, the same slopes of the mountains and intersections of the valleys, and the same horizontal strata. At Aggeri, the entire scene suddenly changes. The mountains are now rounded, and strata forming projecting terraces are no longer seen. The travellers found themselves all at once in the regions of granite; the whole country between Aggeri and Air consisting of crystalline (so called) primitive rocks, with mica-slate and enormous masses of granite in great diversity of mountain forms. From Ghat, the general surface of the country continues to rise, and at Selufiyeh the travellers saw around them the highest mountain masses met with on their journey. After the middle of August, they experienced the influence of the Sudan rains; the atmosphere then beginning to be humid, and the evenings or mornings being accompanied by fogs. Frequent thunder storms and heavy rains also occurred. Under the influence of these rains the aspect of the wadis became completely changed; luxuriant plantations of palms being everywhere met with to the south of the Taghajit.

Stay at Tin-Tellust and Tin-Teggana (Air).

The expedition now having fixed their encampment for their residence in the kingdom of Air, Mr. Richardson's chief care was that of obtaining the signing of certain treaties on the part of the chiefs, while his scientific companions longed to explore the country around. It may be premised that these objects were partly attained. Dr. Barth made a most interesting journey to Agadez, while for other projected tours, for example that to Bilma by Dr. Overweg, no protection by any means could be obtained.

Reception by the Sultan En-Noor, and subsequent treatment.

On the 4th of September the travellers were received by the sultan En-Noor in his palace, a long mud-shed, when they delivered a number of presents, the largest yet given. All the articles were carefully examined, but not a word was said. The sultan, a venerable looking black, but with something of an European cast of features, about 78 years of age, received the travellers favourably, assured them of his protection, and ascribed the robberies they had suffered on the road as arising from a general fermentation, a kind of revolution throughout the country. But, except these friendly expressions, they received in return no presents or kindness, and so difficult was it to obtain provisions by purchase that they were reduced to great straits, and were obliged to eat biscuits as their last resource. In addition to this adversity, they learnt that the sultan was only pleased with the quality of the presents, and not with the quantity, and that he, consequently, expected a great many more. Indeed, on the 13th October, he sent a direct and most threatening message to Mr. Richardson, demanding for his protection and escort as far as Sudan 700 dollars (at first asking no less than 1,000), and refused to see him unless he agreed to the request. It was with difficulty and an extra present to his courtiers that he was persuaded to be satisfied with a smaller sum. Nevertheless, on the night of the 16th the encampment was attacked by a band of thirteen robbers; and, but for an early alarm, which put the robbers to flight, considerable plunder might have been committed. It was afterwards found that these robbers had come all the way from the northern border of the country for that purpose. They carried off some tea packed in tin boxes, probably mistaking them for silver. The sultan was exceedingly angry about this attack, ordered an immediate pursuit of the robbers, and caused the travellers to move their encampment close to the houses of the town. He also wrote to the sheikhs of all the towns and villages around, not to offer any further molestation to the Christians, who were his guests, and as sacred persons recommended to his care and protection. After this they were no further molested during the remainder of their residence in Air, and by degrees obtained the sincere friendship of the sultan and his people, although every favour had to be dearly bought. There was, seemingly no end of distributing presents among this nation of robbers and beggars, for the messengers from the other sultans of the country were dispatched to Tin-Tellust with that special view.

Signing of the treaty, and friendly relations established.

By the 24th of September the friendly relations with the sultan had so far increased, that Mr. Richardson paid a visit his highness to request him to sign the treaty of amity and commerce he had prepared. On this occasion En-Noor really seemed what he professed to be, the friend of the English, and accepted both the treaty and the present of a sword with ardent manifestations of pleasure. This was a day rejoicing and thanksgiving to the travellers, who hoisted the union-jack over the tents and fired a salute; for they found that with the friendship of the chiefs, and particularly of En-Noor, who exerts paramount influence in Air, the people were also showing themselves more and more friendly, so that after a residence of several weeks the former felt themselves quite at home in that singular country. The fanaticism gave way by degrees, and the sultan became so much attached and condescending to his guests, that he visited them almost daily in their tents, took tea or coffee with them, and chatted with them like old friends. Meanwhile the time was usefully occupied in collecting as much information as possible on every subject, and also in making extensive studies and researches into the different languages. In addition to these labours Mr. Richardson was occupied in matters connected with the general management of the mission, while Dr. Overweg had an extensive practice as Taleb (doctor), and Dr. Barth filled up part of his time by a tour to Agadez, which will be described hereafter. Thus the months of September and October passed off pleasantly enough upon the whole, and the travellers were only awaiting the departure of the great salt caravan of the sultan to Sudan, under whose protection they were to continue their journey to the south. At the end of October all the male inhabitants, with few exceptions, went off to Bilma to fetch the salt, which the caravan was to take to Sudan.

Shifting of the encampment to Tin-Teggana.

On the 2nd of November preparations were made for leaving Tin-Tellust, and slowly advancing southward till the party from Bilma should come up. Prince En-Noor himself was at the head of the caravan. There never was a more picturesque one: ladies on bullocks, children and women on donkeys, warriors on meharis, merchants on camels, the sultan's horse harnessed marching alone, and following steadily; goats and their kids, sheep, foals of camels, &c., running and straggling along! At a short distance from Tin-Tellust, however, at Tin-Teggana, a halt was made. Here a portion of the caravan, headed by En-Noor's principal slave, separated and pushed on to Sudan. It was the anxious wish of the travellers to proceed at the same time, but they were persuaded by En-Noor to wait till he himself should be able to start, as they would travel with greater security. This proposal they felt themselves reluctantly compelled to accept, though it caused them upwards of another month's delay. The boat for navigating Lake Tsad was, however, sent in advance. Nothing remarkable happened in the interim of their protracted encampment at Tin-Teggana.

Dr. Barth's journey to Agadez.

During the sojourn of the expedition at Tin-Tellust, Dr. Barth obtained permission and protection to visit Agadez, the capital of Air and situated in the south-western portion. He left the former place on the 4th of October, escorted by a caravan mounted on bullocks and camels, the general direction of his route being about S.S.E., and the distance to Agadez, in a straight line, 132 geographical miles, which he accomplished in six days going and seven days returning. It is an interesting tract of country, presenting a great variety of scenery, now composed of fine valleys, now of mountain chains cut up by defiles. Here and there charming spots, green with herbage and trees, particularly rich in doom palms, and of a truly tropical character, greeted the eyes of the traveller.

Description of the route.

On the first day Dr. Barth passed the wells and wady of Eghellua. Then followed the wady of Tegarrèrssa, full of fresh herbage and fine trees, and receiving a great many streams from the adjoining mountains of Bondayeh. Beyond is the Wady Tshizolen, close to the mountains of Eghellal, 3,000 to 3,500 feet high. On the second day a rocky ground, a spur of the mountains, was passed, entering the narrow valley of Eghellal, beyond which rise the famous mountains of the Baghzen. The next day's journey from the well of Eghellal differed much from all Dr. Barth had seen before in Air. Instead of narrow valleys or open deserts, a pleasant open country stretched out before him as far as the mountains of the Baghzen, with grass as fresh and green as any in Europe, and enlivened by the cooing of wild doves, and the cry of the antelopes. Higher and higher ascending, Dr. Barth reached on the fourth day the wady Asada, where the scenery is so luxuriant, the vegetation so rich, that the path is shut up by branches, which render it difficult to keep on the camel's back. It lies at the western foot or slope of the majestic mountain-chain of Dogem, the highest of the whole country, and estimated at 4,000 to 5,000 feet high. This district is thickly infested by lions, here called "the father of the wilderness." Further south Dr. Barth saw five at one time, and crowds of apes of the size of a small boy, squatting on the lower hills. Beyond, overhung by the mountains of Auderas, is the rocky plain of Tarist, famous among the Arabs and Tuaricks, on account of the remains of a mosque, founded by a great saint called Sidi Baghdadi. The basaltic formation here succeeds the granitic; and the plain is covered with loose black stones, about the size of a child's head. Dr. Barth thence descended into the wady Auderas, a rich valley thickly overgrown with palm trees, interspersed with fields of corn. Here our travellers saw slaves being yoked to a sort of plough and driven like oxen by their master. This is probably the southernmost place in Central Africa where the plough is used, in Houssa and Sudan the hoe being the only instrument employed for preparing the ground. The valley of Auderas, as well as those to the south as far as Agadez, not only produce ghussub, but corn, wine, dates, and almost every species of vegetables, their cultivation, however, being very limited. On the 5th day Dr. Barth ascended the wady Buddeh, and encamped at a small village called Tawar Nuaijud. A prickly plant called karengia was found in this valley. After traversing two other valleys, named Tefarrakad and Borel, he arrived at Agadez, previously passing almost a whole day at some distance from the town, in order to enter it at night, it being the custom in this country never to enter a town by day.

Notes on Agadez.

Agadez is situated on a hamâda or table-land, consisting of sandstone and granitic formations. Its circuit is three miles, including about 700 houses, with 7 to 8000 inhabitants. No author is known to have mentioned this place before Leo Africanus, in whose time it was a flourishing town. Agadez, from its situation, must always have formed an important central place between the Kelowis and the tribes inhabiting the districts to the south and west. There are traditions among the inhabitants, that it owes its origin chiefly to some tribes coming from the north, probably belonging to the Berber race. There is no doubt a good deal of slave blood among the present inhabitants of Agadez, as is the case with the whole population of the southern portion of Air; but there must have been a very ancient stock of indigenous black people, who have transmitted a peculiar language of their own, the Emghedésie, which is the same language as that spoken by the people of Timbuktu.

Agadez formerly contained not less than from 50,000 to 60,000 inhabitants, there being now only about 8,000. Dr. Barth was, however, assured by the Turwâti, one of whom had been at Timbuktu seven times, that it was much larger than that place. At present the appearance of the town is that of an almost ruined place, scarcely the sixth part of it. The inhabitants are partly merchants, partly artizans. The merchants seem to visit only the markets of Kashna, Tasawa, Mariadi, Kano, and Sakatu, and do not go to the northern markets of Ghat or Murzuk, unless on a journey to Mecca. There exists no intercourse with Timbuktu. The commerce of Agadez itself is chiefly in ghussub (millet), which constitutes the principal and only food of the inhabitants. The manufactures are very limited, consisting of leather-work and mats. The saddles made in Agadez, particularly those used in riding upon the maheris or swift camels, and also the sandals, are far-famed.

Respecting the degree of civilization of the inhabitants, it may be mentioned that there are five or six schools in Agadez, where the boys are taught to read the Koran, and to write. The women seem to enjoy great freedom. Some of them are pretty, and have Arab features; and among the men Dr. Barth observed fine faces and good figures. The population is so mixed that it would be difficult to make out the type of the original stock.

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The houses are generally spacious, built of mud, and a few are whitewashed; they are all flat-roofed, the roof being formed of planks of the doom-palm, covered with mats, over which earth is thrown. Agadez has a tower, which is from 90 to 95 feet high. For such a place, situated in the midst of warlike hordes, a tower is of the greatest importance, in order to be aware beforehand when a razzia or a caravan is approaching. There are wells of very good water near the town, and there is also plenty of brushwood.

Reception of Dr. Barth at Agadez, and his return.

When Dr. Barth arrived in Agadez, the investiture of a new sultan was about to take place, to whom, early in the morning, the former paid his respects. He was a stout man, about 55 years of age,—benevolent-looking, as far as could be judged in spite of his face-wrappers. He sat in a large room, supported by two massive columns, and received his visitor kindly. The presents pleased him, and were acknowledged by the counter-presents of a fat ram, and by meats sent every day. The ceremony of investiture took place on the 16th of October, and seems to have been an imposing spectacle. A great festival succeeded this ceremony. Dr. Barth received from the sultan some letters of recommendation to Sudan, was visited by the most distinguished persons of Agadez, and was altogether well pleased with his reception. He returned towards the end of October, and joined the expedition and caravan on the 6th of November, then encamped in Tin-Tegguna. By Dr. Barth's journey the exploration of Air was considerably extended, and a great mass of information was collected relative to the geography of northern Africa generally.

Before leaving, along with the caravan, the interesting kingdom of Air, now for the first time explored by Europeans, it may be acceptable to the reader to add a few notes, such as would give a general notion of the geography of that country.

Notes on the geography of Air or Asben.

The kingdom of Air, as it is called by the Tuaricks, and Asben by the ancient Sudan name, lies about midway between the Nile and the western coast of northern Africa. From its natural features it can neither be considered as strictly belonging to the Sahara nor to Sudan, but it presents a transition country, where the various features of both regions are blended and mixed together. On the one hand, the tropical rains extend all over the country to its northernmost extremity, which is not the case in that part of the Desert explored by Oudney, Denham, and Clapperton, and lying to the east, nor in that portion lying to the west. Yet, on the other hand, the country does not produce any regular periodic crops as the Sudan, on which it altogether depends as regards corn and other provisions necessary for supporting life. Air may be considered as the stronghold of the Tuaricks, who occupy the greater part of the western Sahara, and extend from Ghadamis and the southern boundaries of the Barbary States in the north, to the Kowara, Houssa, and Bornu in the south.

Boundaries and area of Air.

The boundaries of Air, as far as permanently inhabited, are from about 16° 15′ to 20° 15′ N. lat., and from 6° 15′ to 9° 30′ E. long., but the actual dominions of its population extend considerably beyond these limits in every direction. The area of the region thus defined may be estimated at about 37,000 geographical square miles, which is not much less than that of England.

Population of Air.

The population is pretty considerable for a Saharan country, the total number of inhabitants being estimated at about 64,000, which is at least double that of the whole of Fezzan. Mr. Richardson took some pains to obtain this result, by means of a kind of census, drawn up by the secretary of Prince En-Noor, and giving a list of the various towns and villages, with the estimated number of their adult male inhabitants; to which were then added an equal number of adult females, female slaves or concubines, at the rate of a fifth of the adult, and children at the rate of two to every adult male. The total number of places amounts to 181, which are distributed in the four divisions lying north, west, south, and east of Tin-Tellust, thus:

	Number of Places.	Number of Inhabitants.
Northern Division	38 ..	20,000
Western Division	40 ..	4,000
Southern Division	61 ..	32,000
Eastern Division	42 ..	8,000
Total:	181	64,000

It was stated to the travellers, that the chiefs of Air can bring 14,000 able-bodied warriors into the field. The largest town is Agadez, with about 8,000 inhabitants, while Tin-Tellust has only about 450. There are, however, about half a dozen towns, the population of each of which exceeds 1000, while the great bulk of places contain between that number and 100 inhabitants, and a good many contain not more than 50.

Physical configuration of Air.

The physical configuration of Air is varied. Without exhibiting any connected ranges of mountains or hills or extensive table-lands, it rather consists of a succession of mountain groups and valleys, the general slope being towards the west; Mount Dogem, forming a central knot of the highest group of the country, reaches an elevation of about 5000 feet. In the southern parts of Air a Hamáda forms the boundary and line of waterparting between the Sahara and Sudan, a counterpart, on a small scale, to the Great Hamáda in the north. This southern Hamáda is not the least interesting feature discovered by the travellers, who crossed it on their route to Damergu. Agadez is situated on this elevated band of desert, but how far it may extend beyond that town and also to the east, is not apparent from the sources before me. Probably it is connected with the hills of Bilma and with the waterparting between the basin of Lake Tsad and that of the Kowara. There are alternately fine fertile valleys with naked rocks, and complete deserts between them. Picturesque valleys may be seen winding along between steep precipices,—threads of green in which the tholukh and several species of mimosa and acacia, with the sunk and other trees, flourish in immense growth, sometimes adorned by garlands and festoons of parasitical plants. Wild animals of various kinds range at will in unfrequented places, but do not seem to excite much terror. There are gardens and cornfields in the neighbourhood of some of the towns and villages, the cultivation being kept up during the dry months by irrigation; but only a few of the inhabitants, mostly slaves, cultivate the soil. The geological formation consists of granite and sandstone, and in the southern parts basaltic cones and trachyte break through the horizontal strata of the latter.

Climate of Air.

The climate partakes partly of the character of the Sahara and partly of that of Sudan, and may be considered more agreeable than the former, less dangerous than the latter, and upon the whole healthy and not altogether unsuitable to European constitutions. During the winter months the temperature seems to be at times as low as freezing point, and on the southern Hamáda ice is said to be found occasionally. The regular occurrence of tropical rains has already been alluded to as a characteristic and important feature. The rainy season lasts from the middle of August to the beginning of October, being scarcely, if at all, later than in Sudan. It seldom rains during the night, but the showers come on generally in the afternoon, the mornings being dry, fine, and hot. About 3 p.m. the showers, being preceded by a few puffs of strong west wind, commence and continue till an hour before dark. Thunder storms also occur daily when the rains set in. The winds at other times blow from the east. The rains seem to have been uncommonly plentiful in the season when our travellers visited Air, as the floods were of a magnitude apparently not exceeded in the memory of the inhabitants. Indeed the rains and floods form a considerable part in the diaries of the astonished explorers, who scarcely expected to see a drop of rain in that region. When entering the kingdom of Air, and just having escaped out of the hands of the robbers, their lives were actually endangered and considerable injury was done to their effects by sudden floods. This happened at Tintaghoda, on the 30th of August, and the scene is thus graphically described by Mr. Richardson:—"About four o'clock this afternoon there was a cry in the encampment—not that the Haghar were coming—not that another troop of robbers and wild people were advancing upon us to attack us; but the cry was '*El wady jace!*' 'The wady is coming!' Going out to look, I saw a broad white sheet of foam advancing from the south between the trees of the valley. In ten minutes after, a river of water came pouring along, and spread all around us, converting the place of our encampment into an isle of the valley. The current in its deepest part was very powerful, capable of carrying away sheep and cattle, and of uprooting trees. This is one of the most interesting phenomena I have witnessed during my present tour in Africa. The scene, indeed, was perfectly African. Rain had been observed falling in the south; black clouds and darkness covered that zone of the heavens; and an hour afterwards came pouring down this river of water into the dry, parched-up valley. This incident of wady Tintaghoda explains the Scriptural phrase, 'rivers of water'; for here, indeed, was a river of water appearing in an instant, and almost without notice." The next day the rain continued to pour in torrents. "We have hitherto had to struggle against mental anxieties, against fatigues, heat, drought, and thirst: we have now to contend with rain and floods. Everything is becoming awfully damp, and everybody looks awfully dismal. I can see, from the lugubrious countenances of the Kelowis and the blacks, that the rainy season is their real winter. They go shivering about, and seem as if they were half drowned. Again there was a wild halloa of 'The wady is coming!' Our people, however, contented themselves at first with shouting, and made no preparation for the advancing floods; but in a short time they found it necessary to bestir themselves, and began to make dams and dykes, with the aid of sticks and hatches. These expedients proved of no avail. The water swelled wildly up, higher and higher, and sheets of foaming waves came whirling in amongst us. I called out to Yusuf to select some high ground at once, to which our goods might be conveyed. He calmly replied: 'The people still stay where they are;' implying that there was no danger, that the inundation would subside like the former one, and that we should escape with a wetting. Not so, however. All the low parts of the valley were already covered with a turbid stream, that broke fiercely round the trunks of the trees; and at length the mounting tide threatened our tent. Yusuf then made a little child's dam around, as if in sport; but in a few minutes this was swept away, and we found ourselves standing in the water.

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"It was now absolutely necessary to move; and our people, who seemed until then to have been paralysed by the humidity, as we in northern climates sometimes are with cold, began to bestir themselves, and to transfer our tents and baggage to a piece of ground which rose considerably above the level of the valley, and was surrounded with rushing waters. The remainder of the caravan imitated us, and we soon saw them all occupying the summits of little islands, whither the camels, at least such of them as did not instinctively take refuge there themselves, were also driven. This was a good opportunity of seeing a specimen of African character. The Kelowis made no preparation for the deluge until the last moment, and then seemed absolutely to make the worst possible. They rolled their bales of dry goods in the water as if they were so many logs of wood, although by lifting them up a little all might have at first been saved quite dry. Meanwhile the black servants were dancing, singing, and rolling about in the waters, as if some sudden blessing had overtaken them.

"The water still continued to rise, and to foam over the margin of the island. We were compelled by degrees to retreat towards the centre, and as there was no sign of abatement, and as the whole valley had become one rushing river, covered with floating trees,—some shooting singly along, others entangled into rafts or floating islands, I began to entertain serious misgivings. Never was there a more perfect picture of a deluge! It was the Biblical deluge in miniature: and I calculated with intense interest how many inches additional rise would utterly destroy our goods, and how many inches more peril our lives. The most gloomy forebodings troubled me. I had always looked forward to Air as a haven of safety, and instead thereof it had proved to be a place of persecution. When men had ceased to fight against us, nature began. I thought I could hear the fanatical people of Tintaghoda say one to the other, 'Ah! they saved their lives by money, but now God comes in to punish and destroy them.' Yet whilst I stood apart and tortured myself in this wise, our people, children of the day, who take no thought for the morrow, satisfied that the waves had not yet reached them, were full of merriment and laughter, and seemed to mock the flood that still rose and rose, bending the largest trees, sweeping away the brushwood, and roaring angrily around the margin of the islands. Perhaps they knew that their lives, at least, were safe; whilst I reflected that, if even we could swim to shore, leaving our property to the wild mercies of the waves, we should land in an enemy's country, without the means of satisfying the cupidity of the first bandit who chose to attack us, and would most probably soon be sacrificed. I was anxiously watching the progress of the inundation when at last it seemed to be checked, and no longer to rise. God had not, then, abandoned us, and we were not driven from the fire to the waters to perish! The flood remained stationary for awhile, still rolling along the valley, which it seemed to fill from side to side; then we noticed a slight decrease, then a progressive and rapid one: hope buoyed up our spirits, and we thanked the Almighty for our deliverance. As I have mentioned, I have seen floods before, but never one on so grand a scale as this, which was truly African in its magnitude and character.

"As if Providence were now resolved to visit us with marked favour, just at the moment when the waters began visibly to decrease, and patches of land to appear here and there, the escort sent by sultan En-Noor came riding over the neighbouring heights. Our people discovered them, and shouted, 'See, the Kelowis! the Kelowis!'

"The waters rose above the general surface of the wady fully two feet and a half. Had this deluge come during the night we should scarcely have saved ourselves; or, at any rate, the greater part of our property and our camels must have perished. The power of such a body of water rushing along is tremendous. A great number of houses of Tintaghoda were carried away, and the inhabitants declared that they never remembered such an occurrence to have happened before. I can well believe them, otherwise the site of the town would have been changed for higher ground. Trees numberless were uprooted, and brought down by the mighty current, which must have considerably altered the appearance of the valley. We could already see that the earth was ploughed up in all directions; and when the inundation was at its height, serious fears were entertained lest the island on which we stood should itself be swept from under our feet." Subsequently the waters subsided.

Towards the end of September the rains decreased, and the wind, which appeared instead of the rain, generally began about an hour after noon, and continued to blow in fitful gusts until 3 or 4 p.m., when it gradually subsided. The last thunder storm of the rainy season was experienced by Dr. Barth on his tour to Agadez, on the 7th October.

Plants of Air.

As may be presumed from the amount of rain and its regular occurrence, Air presents a more luxuriant vegetation than any other region of Northern Africa in the same latitude that we are acquainted with. So great is the amount of rain as not only to sustain and generate the vegetation, but at times to prove its destruction, for the expedition, both in the Wady Tintaghoda, situated in the northern districts, and on their route to Damergu, found immense numbers of dead and overthrown trees, torn from their roots by the force of the floods. With the beginning of the rainy season the whole country assumes a fertile and verdant aspect, which was so pleasing and striking to the eyes of the travellers when approaching its northern frontiers, as to made them believe they were entering Sudan; and south of Tin-Tellust, the landscape after sunset appeared to them like old England, the species of trees not being visible, the doom-palm reminding them of the thorn elms along the hedges.

The trees consist chiefly of the tholukh and the doom-palm. Then there are acacias and the magnificent bauré tree, which Dr. Barth found south of the wady Audgras. The trunk of a tree measured was 26 feet in circumference, the thick crown rising to the height of 80 feet. Also the suak and the ethel. The inhabitants studiously preserve the trees of their country, for without them there would be neither shade nor verdure in most parts, and many Wadis now fertile and inhabitable would be barren and desolate. In the valley of Tin-Tellust the tholukh trees are not allowed to be cut down, and only in the time of drought and dearth, when the flocks can find no herbage in the valley, the boughs are lopped off, and the leaves given as food. Thus it is that Air contains many woody tracts, and even forests of considerable extent, not only in Wadis, but also on high plains. There are several species of parasitical plants, the most frequent being called *kaushi* in Housa, and *barango* in Bornu. It is a fine plant, its flowers being not unlike the woodbine or honeysuckle, but devoid of all fragrance. The leaves are succulent, full of moisture, in shape of a long oval, the longest not more than an inch and a quarter. This parasite is found upon nearly all the tholukhs, but also fastens itself on other trees, and often kills the branches from which it draws its strength—a real sap-sucker. Air produces many plants, the cultivation of which would afford subsistence to man, such as ghussub, corn, wine, dates, and various kinds of vegetables. But in general the rich soil is left uncultivated, and is covered by wild and sickly vegetation, the inhabitants living chiefly on the productions of Sudan, in exchange for which they supply Sudan with salt.

Senna is collected in all the districts of Air, but it is cheap now, and does not fetch the price in Tripoli which it formerly did. Indigo was found by the travellers as far north as Amfissas; it is called *neela* in Arabic and *bala* in Sudanese; and growing as it does amongst the other herbs, may easily be confounded with a common herb. This plant is one of the products capable of working the regeneration of Africa, if Africa is to be civilised by legitimate commerce. *Abisgen* is a fruit which abounds in Air. It is half the size of small currants, and has not a disagreeable taste—a sort of bitter-sweet clammy taste; this fruit may be called Air currants. A great quantity of wild water-melons, *delalah*, occur, which are very small and bitter, but the people, nevertheless, eat them occasionally; if cultivated, they would soon yield an excellent supply. Wild cauliflower also, in great quantities, is over-spreading the surface in some parts. It is called *liftee* in Arabic, grows in lines and circles, determined

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apparently by the action of the water, which deposits the seeds. No use is made of this vegetable, it being very bitter.

Animals of Air.

The Kelowis neither cultivate the soil, nor do they hunt; so that this country abounds with wild animals. Some districts are exceedingly rocky and desolate, affording many a retired den for the lions, who descend the rocks and prowl about for prey in great numbers. Then there are the jackal, wolf, hyæna, the wild boar, the wild ox, the wadan, together with gazelles, monkeys, hares. The Southern Hamáda is the home of the giraffe, than which no place could be better adapted for such an unwieldy creature, there being abundance of small thelukh, on which it feeds, while the district is open and out of the reach of ferocious animals. Great numbers of the jerboa occur also in the latter district. Of birds, the ostrich and several species of eagles are found. Numerous small birds haunt the trees, amongst others a very beautiful species of dove, with a black ring round its neck; and a great number of various other pigeons, which were found very palatable by the travellers; a beautiful species of *upupa*, partridges, the woodpecker, linnets, and a little black-and-white bird with long feathers in its tail; also guinea-hens. Of reptiles and the other classes of the animal kingdom, some serpents,—not very large,—and lizards, were found. Mr. Richardson once discovered under one of his boxes a léfa, the most dangerous species of serpent in that region. Lizards, which almost through the whole desert were found darting about and around the camel's feet, became scarce to the south of Wady Unan. Scorpions are plentiful, and, according to the people of Tin-Tellust, three different species occur, each distinguished by a different colour, black, red, and yellow. In the Hamáda a large turtle is found.

Inhabitants of Air.

The inhabitants are all called Targhee, that is Tuarick, by the traders of the north. They are various in origin and in name, but according to the natives, there are only two great tribes, the Kelowis, which division includes the Kelowis proper, the Kaltaalak, and Kalfadai; and, secondly, the Kilgris, including the Kilgris proper, the Iteesan, and the Ashraf. The Kelowis are probably of genuine Targhee origin, though with a mixture of Sudan races. The Kilgris are located southward beyond Agadez, along the Sakatu route, and far into Sudan, where the influence of the Targhee tribes seems to be rapidly on the increase. The Kelowis, the predominant tribe of Air, are, for the most part, tall and active, little encumbered by bulky bodies, some having both complexion and features nearly European. At any rate there are many as fair-looking as the Arabs generally, while others are quite negro in colour. The women are smaller and stouter; some are fattened like the Mooresses of the coast, and attain to an enormous degree of *embonpoint*. They are not ill-looking, but offer nothing remarkable in their forms.

The inhabitants live chiefly in huts made of dry stalks of the fine herb called bou rekabah, in the form of a conical English haystack, and are very snug, impervious alike to rain and sun. There are a few houses built of stone and mud. Some of the huts are also mere sheds, with a roof supported by four poles. An important article of furniture in the habitations of Air, is the bedstead. Whilst most of the inhabitants of Fezzan and other parts of the northern Sahara as well as Sudan, lie upon skins or mats upon the ground, the Kelowis have a nice light palm-branch bedstead, which enables them to escape the damp of the rainy season, and the attacks of dangerous serpents and scorpions.

The food of the inhabitants,—who do not seem to be over-fed,—consists principally of the grains of ghussub and ghafuly, or guinea-corn, both being generally mixed together. Maize, rice, and butter are secondary articles of provisions, being like the former chiefly derived from Sudan. The Air cheese is made in little squares, three by two inches broad, and a quarter of an inch thick. It is eaten fresh, but has a poor flavour. The people prefer pounding it into dust when dry, and drinking it with ghussub-water, which is white as milk, and very cool. The paste thus made is very white, and becomes as hard as a stone when dry. They have also flocks and herds of sheep, camels, and bullocks, but little animal food is consumed. Our travellers had been staying upwards of four weeks in Tin-Tellust, before a bullock was killed,—affording them the first fresh beef since leaving Tripoli. The bullocks are used chiefly for draught, and to carry goods from Air to Sudan. Asses are exceedingly numerous, and are likewise used for importing corn from Sudan. The population of Air, being scattered about in small towns and villages, a few hours journey apart, these animals are found very useful for the transport of the persons and effects of the poor. The richer people have camels of the Mehari species, like all the Tuaricks; and in some respects it is the possession of this splendid animal which distinguishes the Kelowi population from the people to the south. For example, all their sports and pastimes would be exactly Sudanese were it not for the introduction of the Mehari. On the celebration of a wedding, the Kelowis ride round the groups of guests on their silent-treading camels, measuring their movements to the sound of a big rude drum, while the men dance and flourish their lances; and the slaves both dance and sing. Manufactures are very inconsiderable, and they flourish chiefly in Agadez, where leatherwork (sandals and saddles) and coloured mats, are made to some extent.

The government of Air is a curious combination of monarchical and patriarchal character, with a dash of democracy into the bargain. The princes and the people seem alternately to appear on the scenes, exercising sovereign sway. The great sultan of Agadez is elected from out of the country; but he is compelled to seek the ratification of the chiefs, the elders, and the populace within. Then there is the great chief of the Kelowis, whose town or camp is at Asudi; with sultan Lousou, a most influential man, not to speak of the great En-Noor himself, who has perhaps, personally, the greatest political weight of them all. Each of these great men is perpetually surrounded by an army of retainers, dependants, and slaves; and public affairs are transacted, partly according to some old routine, difficult for a stranger to understand, partly after the fashion of the "Arabian Nights", kings meeting casually at the head of great armies in some poetical wilderness. All these chieftains are both pastors and merchants. One of the chief articles of trade is a traffic in their unfortunate fellow-creatures. They are the greatest slave-dealers in the Sahara, two-thirds of the whole commerce being in the hands of the Kelowis. The sultans levy duties likewise on the caravans that pass through their country, but they have no right to apply taxation to their quasi-subjects. Sometimes, when they are "hungry," they make a razzia on a distant tribe, and find both slaves and cattle at their disposal. In religious respects they were found more tolerant than other inhabitants of the Sahara.

Departure from Tin-Teggana, Dec. 12, 1850.

We left our travellers in their protracted encampment at Tin-Teggana, whence they were, at last, enabled to start on the 12th December. The general direction of their route was nearly south as far as the southern Hamáda, when it turned about S.S.E. Six miles south of Tin-Teggana, they came to a remarkable serrated rock lying east of Wady Tallesheu, about 1500 feet above its basis, and called Kurriantal-leshen. Dr. Overweg ascended it, and found the foot of it to be formed of coarse sandstone. Above it were regular and vertical columns of an earthy trachyte, the columns having from four to six sides, and varying from two to four feet in diameter. In the middle of the trachyte was a black fine-grained stone of the basaltic kind, in columns consisting of thin plates.* The rock in the valley is sandstone and granite. At the foot of the peak lie confused groups of trachyte columns, and the summit, which exhibits a beautiful columnar formation, appears to be also trachyte. In this wady they found an immense number of dead trees, torn from their roots by the floods of the rainy season.

Geological features.

The salt of Bilma.

On the 14th December they were joined by the salt caravan from Bilma. The salt is all tied up in small bales or bundles, the outward wrapper being matting or platting of strips of the leaves of the doom-palm. There is, first, the *cauto*, a kind of pillar or pedestal, about 16 inches high, and three or four broad in its widest part. As to weight, 10 of these are a good camel load. Then there are two cakes, one of refined salt and the other coarse. These coarse cakes are about five inches in diameter, and the refined ones seven inches, the former being about 3lb. and the latter 5lb. in weight.

Mountains of the Baghzen.

On the 17th December they reached the well of Amfisas (lat. 18° 0′ north) about 20 miles N.E. of the Baghzen mountains, having traversed fertile wadys and valleys, out of which rise granitic cones. The picturesque rock Mari is about six miles N.E from Amfisas. The surrounding country is full of scattered rocks, ranges, and groups of hills, the country appearing open only in the direction of Bilma. Leaving Amfisas the travellers passed over a plain of black basalt, succeeded by a wady with hard clayey soil, then sandstone, and afterwards granite. On the 20th December they rested opposite the eastern side of the celebrated Baghzen, Dr. Overweg ascending what may be considered its lower terrace. It consists of porous basalt, and afforded a capital view of the high and steep slopes of the Baghzen, with its narrow gorges, the home of great numbers of lions. The next day they descended along the Wady Unan which widens out to a considerable plain further south, and passed through splendid forests of the doom-palm, which, laden with fruit, imparted to the country a truly tropical aspect. A beautiful bird's nest was noticed, built most artistically of straw, suspended on a slender twig. Christmas-eve was passed at a place called Bargot.

* The basalt seems to occur in narrow dykes intersecting the columnar trachyte, to judge from the specimens sent home. Ed.

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Southern Hamáda.

On the 27th December Agalgo was reached, near which rises the edge of the Hamáda forming the waterparting between Air and Sudan. It is not of the same extent as the one in the north, but nevertheless takes four days, on an average, to cross it. Several pieces of scoria, or lava, were found on the road, while the granite disappeared, to be replaced by sandstone. The ground was covered with the footmarks of gazelles, ostriches, the habara, and the giraffe, which latter here attains its northern limit in that part of Africa. There is not the same absence of water on this desert tableland as on the great Hamáda in the north, though in the hot season vegetation is said to be entirely dried up and no water to be met with for four days. A characteristic feature is the occurrence, in this tract, of a large species of turtle, 2½ feet long by 1½ feet broad. A great number of jerboas were also met with, white all over the lower part of the body and neck, and straw-coloured on the top of the head and along the back, there being an inch of black near the tip of the tail. On the third day of the traverse of the Hamáda a tract of perfect desert-plain, mostly sandy, was passed. In this part many birds of prey abound, about twenty large black vultures being seen collected in one spot, feeding on a dead camel. A young ostrich, only a few hours hatched, was caught and kept as a pet, while a little further to the south no less than eleven of these fine birds were seen very close, quietly feeding like so many sheep.

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Entering Sudan.

On the 1st of January 1851 the travellers passed the most barren portion of the plateau and descended by a gentle slope to Sudan. The weather experienced in that region was bleak and cold, with a keen bracing air from the N.E., under which the caravan suffered severely, and several camels escaped from the numbed fingers of their drivers. The next day the travellers got fairly out of the elevated desert, and entered upon a wilderness of small thelukh-trees full of bird's nests, the soil covered with karenga and other herbs. Great numbers of ant-hills were met with. The same character of landscape continued to the village Nasámat, which was reached on the 3rd of January. Here flocks of sheep and droves of oxen betrayed the commencement of an inhabited country, and a real blessing and happiness it was to the travellers to be kindly received by the inhabitants, who are Tuaricks and belong to a tribe called Tagama. Plenty of provisions were now obtained by the hungry caravan: fowls and cheese, young ostriches and eggs of ostriches, and the flesh of the giraffe, were brought for sale. The latter was relished and its taste found to be somewhat like beef. Hunting the giraffe is a great occupation with the people of this village, and its flesh is a source of subsistence for them. Nasámat has about 100 huts, covered with the skins of the bullock, and probably that of the giraffe. On the 5th January the caravan arrived at the large village of Gumrum or Gümrek, also belonging to the Tagama, who possess considerable herds of cattle. Near this place a fine sheet of water with a forest of luxuriant trees gladdened the eyes of the travellers as a genuine Sudan picture. The country around was likewise pleasant, compared by Mr. Richardson to the undulating county of Essex after the harvest is gathered. Many gazelles were seen, and guinea-fowl in great numbers, 30 or 40 together. Doves and other small birds showed themselves in flights, as well as many vultures.

Tagama Tuaricks.

Damergu.

The caravan now entered Damergu, a frontier country of Bornu, under the sway of the Tuaricks, greatly intermixed with people of Bornu and Houssa. It is the granary of Air, and is in fact chiefly peopled by slaves of the Kelowis. Olalaal in about 14° 30′ north latitude is the capital, besides which there are said to be 200 or 300 towns and villages in the country. The expedition encamped on the 7th January at the village Tagelal, which belongs to En-Noor. A considerable change in the weather was felt, it being hot and oppressive.

Separation of the travellers at Tagelal. Jan. 11, 1851.

It was arranged that the travellers should part here for a time and take different routes, in order to explore as much of Sudan as possible, making Kuka their place of rendez-vous. Mr. Richardson was to take the direct road by Zinder, Dr. Barth by Katshna and Kano, and Dr. Overweg by a circuitous westerly route through Guber and Mariadi. On the 11th January 1851 they parted, never, alas, all three to meet again. "We took leave", says Mr. Richardson in his journal, "one of the other with some emotion; for in Central Africa, those travellers who part and take divergent routes, can scarcely count on all meeting together again."

III. MR. RICHARDSON'S JOURNEY FROM DAMERGU TO UNGURUTUA, 11TH JANUARY TO 4TH MARCH 1851.

The direction of Mr. Richardson's route was nearly due south for about 15 geographical miles, when it turned about S.E. and continued in that direction as far as Zinder. From Zinder it was eastwardly. At the former distance a conical-shaped mount, called Boban Birni, was reached, after which an extensive forest was crossed, of at least 20 geographical miles in width, and separating Damergu from Bornu. After having crossed this forest and travelled another day's journey through the pleasant undulating province of Damagram or Zinder, Mr. Richardson entered its capital, a large town, beautifully situated among green hills, on the 14th January 1851. His reception presented a striking contrast to the hostilities and dangers experienced in the desert, for he found a house and abundance of provisions ready for him, and was most kindly received both by the sultan and the inhabitants. The sultan's interpreter is Sherif Sogher, a native of Fez, an enlightened man, with whom Mr. Richardson had frequent intercourse while at that place. He is appointed by the Sheikh of Bornu as his confidential agent, in fact a kind of spy, in Zinder.

Zinder.

A protracted delay of nearly four weeks was caused at Zinder, on account of a razzia sent to the neighbouring countries. Mr. Richardson was all this time well treated, had good opportunities of making observations respecting the country and people around, and also of collecting information generally; provisions of every kind were supplied to him in abundance. Sad sights, however, connected with the slave-trade checked his delight and threw a gloom over every thing else. During his stay the sultan went out in person to hunt down the subjects of his own sovereign, that he might pay his debts by selling them into captivity.

Notes on Damagram or Zinder. Position and extent of the province.

The province of Damagram forms the north-westernmost frontier of Bornu, and extends from about 13° 20′ to 14° north latitude, and from 4° 30′ to 10° 50′ east longitude. It has been alternately a Houssa and Bornu province, and belongs at present to the latter. Rebellions frequently occur in that part of the world, as the people greatly detest central government. Formerly the capital of the province was a city of the same name, now Zinder is the chief town, the latter name being, therefore, sometimes applied to the province. Damagram is a fine district and capable of becoming a rich and happy country by an industrious population, at present the chief source of subsistence being derived from rapine and man-stealing. There are remarkably fine districts, teeming with fertility, but "not a 10,000th part of the soil is cultivated." This province seems unquestionably situated on the line of water-parting between the basin of the Kowara and that of lake Tsad, and consequently on comparatively elevated ground. Most of the natural productions of Sudan seem to be found in Damagram. Mr. Richardson observed in the gardens the henna plant, the cotton, indigo, and tobacco plant; of vegetables chiefly onions, beans, and tomatas, with a variety of small herbs, for making the sauce of bazeens, and other flour-puddings. The castor-oil tree occurs on the hedges of the gardens in abundance. Large quantities of indigo can be had at prices which would bring great profit in Tripoli, but the merchants refuse to engage in this commerce. On his route through the province, Mr. Richardson saw the ghussub cultivated to some extent, and in some localities wheat, cotton, indigo, tobacco, onions, pepper, dates, (bearing twice a year), henna, potatoes, (*daukali*), a species of palm, bearing a large fruit (*gondo*), like the mealy melon, gourds, *nogo*, and *gwaza*, which last are two species of potatoes. The domesticated cattle are horses, asses, oxen, sheep and goats, and a few camels. Cats are a great domestic nuisance, devouring, as they do, the fowls. Of wild animals are found chiefly lions, wild boars and oxen, hyænas, jackals, great number of vultures, and lizards. Iron is found in the native rocks of Sudan, and is not imported. It is, alas! made into manacles for slaves.

Natural productions of Damagram.

Inhabitants of Damagram.

From the observations our traveller made at the capital of this country, it appears that its male inhabitants pass their life in dreamy indolence, varied continually by the excitement of the razzia. The women divide their time between the kitchen and the toilette. No amusement is sought, except that of drum-beating and the attendant dance. Morals are much relaxed. "The education of the greater part of the males is to fit them for razzias, and this must be considered as the principal cause of the unfeeling manner with which the blacks hereabouts look upon their captive brethren. These captives are their means of livelihood; they live on the products of the razzias, and, of course, the superior intellects with which they may come in contact countenance all their proceedings; for the foreign merchants are equally

...ve-trade.

interested with them in their inhuman expeditions. Africa is bled from all pores by her own children, seconded by the cupidity of strangers."

"The mode of supplying the slave-markets is truly nefarious, and perhaps surpasses all the wickedness of the Tuaricks. If the sultan of Zinder wants gour-nuts, and has no money to purchase them, he sends his servants or officers to a neighbouring village, to steal in open day two or three families, and bring them to the sultan. These poor wretches are immediately exchanged for the gour-nuts." In the razzias this system is followed on a grand scale, thousands of captives being often carried away at one time. The best of the slaves from that region of Africa now go to Nufi, to be there shipped for America. "From all reports there is an immense traffic of slaves that way exchanged against American goods, which are driving out of the markets all the merchandize of the north." Calicoes, powder, dollars, rum, cowries, guns, and many other things, reach Nufi and are thence forwarded to Kano, the great market of Central Africa. Mr. Richardson is decidedly of opinion that nothing but foreign conquest by a non-slave-holding power will extirpate slavery from Africa. In connexion with slavery that observing traveller witnessed in Zinder the most barbarous and inhuman cruelties and atrocities. From 200 to 300 executions are performed every year in that place alone.

Population of Zinder.

Zinder has a population of about 10,000 souls. The military force consists of cavalry and foot,—1000 cavalry having swords, spears, and shields; and 4000 or 5000 bowmen, having only bows and arrows. The houses of Zinder are mostly built of double matting, but a good number have mud walls and thatched roofs. Others are built of mud. There are no nice mosques with minarets. The residence of the sultan is a fort of mud, with walls of some height; it overlooks all the other buildings. There are two principal streets, running from the south to the north; one terminating at the castle of the governor, and the other in the market. These are of some width, there being spaces for a dozen camels to pass abreast. There are, besides, many little squares before the houses of the grandees, where the idle people lounge, of which the streets are always full. The scavengers in the streets of Zinder are the vultures and hyænas, the former walking about in great numbers by day, the latter enter the town in troops by night.

Departure from Zinder, Feb. 8, 1851.

On the 8th of February 1851, Mr. Richardson left Zinder *en route* for Kuka, under an escort, and mounted on a horse presented to him by the sultan. The general direction of his route was east, through a fine wavy country, rising at times into high hills, with comparatively few trees, and more ghussub fields than in the northern parts of the province. On the 10th February he reached a cluster of villages of considerable size, the principal of which is Guddemuni. They are placed on hills. In the deep valley towards the east is a large lake, about four G. miles long, near which rise the rocky hills called the Shaidega, clothed and crowned with trees. The country is very fine and park-like, and were it not for the doom-palm, would be more like some of the best parts of Europe than Africa is supposed to be. Wild boars and oxen, with the filthy vultures of Zinder. Many doves and water-fowl enlivened the scene.

Province of Manga or Minyo.

On the 11th February Mr. Richardson entered Manga or Minyo, considered to be the most powerful province of Bornu; and after passing a great number of villages,—for the country is densely peopled, reached the capital Gurai on the 14th. Gurai is somewhat smaller than Zinder, having a population of perhaps 7000 souls. It is scattered about on several hills, and down their slopes. These hills are bare of trees and vegetation. There is a ditch surrounding the town. It answers the purpose of a fortification, especially as its effect is aided by a thickset hedge. At some places this hedge is growing; at others, it consists merely of branches cut from various trees, but rendered almost impenetrable by being made broad and thick. These defences are quite effectual in the kind of wars carried on in these regions. At a short distance, scarcely a day's journey from Gurai to the north, are located the Duggera Tuaricks, who extend all along the northern frontiers of Damagram and Minyo, skirting the left of Mr. Richardson's route. Formerly they were great bandits, but have been checked of late by the sultan of Minyo.

Mr. Richardson was kindly received by the sultan, and after staying for several days at Gurai, left that place on the 19th February. His route led through a tract of country which may be considered as the southern border of the Sahara, for the vegetation was stunted, and the fauna exceedingly poor. At Gusumana, which forms the centre of a group of several towns and villages, the country was considerably improved. It is situated on a hill, overlooking a steep broad valley, full of doom-palms, while in the gardens wheat, cotton, and pepper are cultivated. Mr. Richardson reached this place on the 21st February, and here it was that he wrote the last words of his journal, for a few days afterwards he fell a victim to the fatigues of the journey and the influence of the climate. His last words seem to hint the cause of the lamentable accident that speedily followed:—"Thermometer at sunset, 82°; weather very troublesome to-day, blowing hot and cold with the same breath." Spring was advancing with its uncertain temperatures in Central Africa. The thermometer stood nearly 30° between the morning and afternoon. Doubtless, however, the unusual fatigue of horse-exercise during the days that succeeded the departure from Zinder may have contributed its share in breaking down Mr. Richardson's strength.

Mr. Richardson's death at Ungurutua, March 4, 1851.

Mr. Richardson died at Ungurutua, about six days journey from Kuka, the capital of Bornu, on the 4th of March 1851, eleven months after his departure from Tripoli. His last moments are described in a letter from his fellow-traveller, Dr. Barth, who hastened to the spot with laudable energy as soon as he heard of the melancholy catastrophe that had taken place. This letter is dated April 3, 1851 and addressed to Mr. Crowe, Her Britannic Majesty's Consul-General at Tripoli, and from it the following are extracts:

"It was on the 25th of March", he says, "that I heard accidentally from a sherif, whom I met on the road, the sad news that my companion had died about twenty days before, in a place called Ungurutua, six days' journey before reaching Kuka, when I hurried on as fast as my horse would allow, in order to secure his papers and effects from being lost or destroyed.

"I now shall send you a short account of Mr. Richardson's death, as far as I was able to make out the circumstances from his servant. Mr. Richardson is said to have left Zinder in the best health, though it is probable that he felt already very weak while he was there; for according to the man whom he hired in Zinder as his dragoman, he had, while there, a dream that a bird came down from the sky, and when sitting on the branch of a tree, the branch broke off and the bird fell down to the earth. Mr. Richardson being very much affected by this dream, went to a man who from a huge book explains to the people their dreams. On the man's telling him that his dream meant death, he seems really to have anticipated that he would not reach the principal object of his journey. But, nevertheless, he seemed to be quite well, mounting even the horse which the governor of Zinder had made him a present of, as far as Minyo, when he begged the governor to give him a camel, which he mounted thenceforward. He felt seriously ill in Kadalebria, eleven or twelve days' journey from here, (Kuka); and he is said by his servant to have taken different kinds of medicines, one after the other; from which you may conclude that he did not know himself what was his illness. Mr. Richardson never could bear the sun, and the sun being very powerful at this time of the year, it must have affected him very much. I think this to be the chief reason of his death; at least he seems not to have had a regular fever. He was happy to reach the large town of Rangarvia after a journey of three short days, and had the intention of returning from here directly to Tripoli, without touching at Kuka, and the low, hot plain of Bornu, which he was very much afraid of. He offered 200 mahboubs for a guide to conduct him directly to the road to Bilma; but there being no road from here, and no guide having been found, it was necessary first to go to Kuka.

"Mr. Richardson, therefore, seems to have taken strong medicines; in consequence of which, in the evening of the third day of their halt at Rangaravia, after having taken a walk through the town, he felt well enough to fix his outset for the next morning. But this day being rather a long one, and the sun being very powerful, he became very tired and unwell; and the more so, as notwithstanding his illness, he had not left off drinking milk, even on his camel, mixing some brandy with it. Having recovered a little during the night, he moved on the next morning, but ordered a halt about noon, on account of his weakness. Having started again at sunset they encamped at midnight. The next day, after a short journey, they reached the Wady Mettaka. Mr. Richardson seemed to feel much better and drank milk and a little jura besides rice. From this place, on the last day of Kebia-el-awel, the caravan, after only a two hours' march, reached the village called Ungurutua, when Mr. Richardson soon felt so weak that he anticipated his death; and leaving the hut (where he was established) for his tent, told his dragoman Mahommed Bu Saad, that he would die. Being consoled by him that his illness was of no consequence, he assured him several times that he had no strength at all; and indeed his pulse ceased almost to beat. He began, then, to rub his feet with vinegar, and applied the same several times to his head and shoulders. After which, in the absence of his servants, he also poured water over himself; so that when they returned after a few moments they found him quite wet. To counteract the bad effect of this proceeding, they began to rub him with a little oil.

"In the evening he took a little food and tried to sleep; but notwithstanding that he seems to have taken something to bring on sleep, he threw himself restless from one side to another, calling his wife several times by her name. After having walked out of his tent with the assistance of his servant, he ordered tea, and remained restless on his bed. When it was past midnight, his old dragoman, Yusuf Moknee, who watched in his tent, made some coffee, in order to keep himself awake; upon which Mr. Richardson demanded a cup of coffee for himself; but his hand being so weak that he could scarcely raise the cup, he said to Moknee: *Tergumento Ufa*,—'Your office as dragoman is finished;' and repeated several times, with a broken voice, '*Forza mafishe, forza mafishe le koul.*' 'I have no strength, I have no strength, I tell you,' at the same time laying Mahommed's hand on his shoulder. Feeling death approaching, he got up in a sitting posture, being supported by Mahommed, and soon expired, after three times deep breathing.

"He was entirely worn out, and died quietly, about two after midnight, Tuesday, 4th March (Jumed-el-awel), without the least struggle. His servant then called into the tent the other people and the Kashella, or officer of the Sheikh, who had come along with them from Zinder, in order to be witness, and while wrapping the body of the deceased in three shirts which they had cut up, ordered the people of the village to dig a grave for him. They then secured whatever of the luggage of Mr. Richardson was not locked up, and prepared every thing for their journey to Kuka. Early in the morning they lifted the body, wrapped up as it was, upon Mr. Richardson's carpet, and carried him to his grave, which had been dug in the shade of a large tree, close to the village, to the depth of four feet. Having then covered his head and breast with a very large tabah, so as to protect it from every side, they covered the body with earth and had the grave well secured.

"I have spoken several times with Haj Beshir that it might be well taken care of, and I am sure the grave of the traveller, who sacrificed his life for his great object, will be respected. I send you with this first kafila, all Mr. Richardson's papers and his journal, which is kept till the 21st February, consisting of six reams, and his vocabularies, not finished, four reams, with Yusuf's journal, as well as all his other papers or letters. I have taken out only the letters of recommendation of the mission, and the papers concerning the proposed treaty, as well as a letter from Lousou, one of the Tuaricks, and another from Ibrahim, the governor or Zinder, to the Queen, which I shall enclose in my report to Government. I send you, besides, an authentic list of all the objects found in Mr. Richardson's possession, as it has been made up on the things being deposited with Haj Beshir." Thus ended the leader of the mission.

Mr. James Richardson was born in Boston, Lincolnshire, on the 3d November 1809, and was consequently 41 years old when he died. The abolition of the system of slavery seems to have engaged the chief of his attention. It was with this benevolent object that he originally turned his attention to Africa. A profound conviction that something might be done towards ameliorating the condition of the African nations, if we were only better acquainted with them, seems to have early possessed him. Among other things, he wished to show the possibility of entering into treaties of amity and commerce with the states of Central Africa. He had so far accomplished the objects of his present and last journey, that he was almost in sight of his gaol, when he was cut off. As an African traveller, and the originator of this expedition, his name will now be added to those who have nobly sacrificed their lives in the cause of African discovery and regeneration.

IV. Dr. BARTH'S JOURNEY FROM DAMERGU TO KUKA, *viâ* KANO, 11TH JANUARY TO 2ND APRIL 1851.

Thus far I have been able to give a connected summary of the progress of the expedition; in the following lines, however, I shall frequently be compelled, for want of the necessary documents, to confine myself to detached notices, often presenting only a slight notice of the results of the respective journeys without being able to present a chronological narrative.

Route from Damergu to Kuka.

From Tagelal, where the travellers separated, Dr. Barth went in a direction about S.W. nearly on a straight line as far as Katshna, thus entering the dominions of the Fellatas. A few miles from Tagelal he passed Olaloal, the capital of Damergu, and about half way between that place and Katshna he left the town of Tasawa a little to the right of his route, having to cross a dense forest before reaching the frontier of the Fellata empire. This forest is rendered unsafe by gangs of Fellatas. Arrived at Katshna, the capital of a Fellata province, he was detained some days by the governor, who extorted from him a high passage money. From Katshna to Kano, Barth took a more easterly route than the one of Clapperton, and found the various streams he crossed running to the eastward. The frontier of the province of Kano is about 25 miles distant from the capital on that route. He arrived at this important place, the London of Sudan in a commercial point, in the beginning of February, and stayed till the beginning of March.

During this time he collected a good deal of information respecting Houssa, and but for this would have been very dissatisfied with his visit to that city; for he was much molested by the inhabitants, and suffered from the unhealthiness of the place by a slight attack of fever. In addition to this, he was greatly disappointed by his commercial transactions, for the great amount of goods he and Dr. Overweg had been induced to purchase at Murzuk,—to be exchanged in the markets of Kano for Sudan money or merchandise,—fetched very low prices, and thus entailed a considerable loss, which, with the robberies in the Sahara, reduced his means in a degree little anticipated. The land around Kano is very fertile and admirably cultivated, being the richest province of the empire.

Account of the Fellata dominions.

Among the information Dr. Barth was enabled to collect, that relating to the present extent and power of the Fellani or Fellata empire, is particularly interesting. Being master of the Houssa language, he could converse fluently with the inhabitants on all topics. The present sultan, residing at Sakatu, is Emir el Mumenim Ali ben Bello. He is said to be able to collect a force of 10,000 horse. Among his governors, who equally adopt the title of sultan, are:

1. Osman ben Ibrahim Dabo, the governor of Kano. This governor has the greatest power, on account of the market, which enables him to send 10,000 cowries daily to Sakatu for the household of the sultan. He is able to collect about 7000 horse.

2. Ibrahim ben Yakúba, the governor of Boshi or Bautshi, residing at Yakoba, and the second, as regards real power, after the governor of Kano; for although he has a force of only 2000 horse, his troops of archers, the best known in Sudan, are numberless.

3. Mohammed Sani, the governor of Zegzeg, a province of great extent. He resides at Zaria, has about 2000 horse, and numbers of archers.

4. Loel, the governor of the very extensive province Adamaua. His residence is Yola, and he has a force of about 2000 horse, and a large army of archers.

5. Hammedu, the governor of Khadedsha (or Hadeja), with a force of about 2000 horse.

6. Mohammed Bello ben Mallem Romáro, the governor of Katshna, with a force of not much more than 1000 horse. This province, on account of its vicinity to the hostile countries of Mariadi and Guber, has greatly declined in power.

7. Abd er Rahmán, the governor of Katagum, who is said to bring 1500 horse into the field.

8. Yerima Ahmedu, the governor of Mesaw, who is said to have 1000 horse at his command.

9. Harder Lernima, the blind old governor of Marmar, who resides at Nacnawa; his former residence, Birni-n-Gorno, having been destroyed by the Bornuese. He is said to have about 700 horse.

10. Ismaêla, the governor of Shera, brother of Abd er Rahmán of Katagum, with no more than 500 horse.

11. Koranga, the governor of Bobêru, having his residence at the place of the same name, with about 600 horse.

12. Mohammed Bello, the freebooting governor of the ruined province of Daura, who, though he has but 400 horse, is feared by all his neighbours.

Besides these twelve governors, who receive their orders directly from Sakatu, there is the governor of Zanfara, named Ahmedu, who, as the cousin of the sultan, enjoys almost the same rights as the above-mentioned persons. He resides at Bakûra, and is in command of a force of 3000 to 4000 horse.

In addition to the foregoing, there are still two important provinces belonging to the Fellatas, Nyffi or Nufi, and Alyori, as Yauri is commonly called; but they do not, like the others, pay tribute to the sultan

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of Sakatu, but to Khalili, the sultan of Gondu. The present governor of Alyori is named Thita. He resides at Afasa, and is able to bring into the field 5000 horse. The name of the present sultan of Nufi is Masaba, who resides at Ladi, the present capital, Rabba having been destroyed by the Fellatas about the year 1846. The governor of Nufi has about 2000 horse.

Route from Kano to Kuka.

On the 5th of March, 1851, Dr. Barth left Kano *en route* for Kuka, passed Gezaua, Gabezaua, Gerki, a large walled town, situated near the frontier between the province of Kano and Bornu, and reached Gummel, the first considerable place within the Bornuese dominions, on the 12th March. After staying a few days at that place, he continued his journey in the general direction of E.N.E., and having passed the large places of Mashena, Bundi, Surriculo, he met with a sherif on the road, who acquainted him with Mr. Richardson's death. This sad account having been confirmed by succeeding travellers, he hurried on as fast as possible, in order to fulfil the last duty to his unfortunate travelling companion; if too late for his burial, at least to make provision that his lonely grave would be respected, and also to take such measures as might be necessary for the successful prosecution of the object of the mission. And well it was that Dr. Barth was at hand, for Mr. Richardson had died so suddenly that no directions had been given by him respecting the affairs of the mission.

Having secured all Mr. Richardson's papers, Dr. Barth hastened on to Kuka, which he reached on the 2nd of April, 1851. On his arrival, he presented himself at once at the sheikh's palace, as one of the surviving Christians who had come from England to bring him presents from Her Britannic Majesty. He was received with great kindness and hospitality by the sheikh. He also found letters from Europe, and the happiness he felt at thus hearing from thence, after the lapse of nearly nine months, he says, he was unable to describe.

While awaiting the arrival of Dr. Overweg, Dr. Barth made preparations for the exploration of Lake Tsad, and collected information respecting every quarter of Central Africa, with the zeal and indefatigability which distinguish this enthusiastic traveller, though the state of scanty provision and disorganization in which he found the whole expedition on his arrival at Kuka, were sufficient to have discouraged the most energetic. In this dilemma, the Vezier of Bornu had lent him 100 dollars; with which he was enabled to pay some of the debts incurred by Mr. Richardson, and part of the salary due to his servants.

On the 7th of April, a courier from Zinder arrived at Kuka, with the news that Dr. Overweg had just reached the former place, whence he intended to proceed to Kuka, either direct or by the way of Kano. To that place he had sent his effects, believing Dr. Barth to be still there. On the 23rd of April, Dr. Overweg not having arrived, Dr. Barth started on an excursion along Lake Tsad as far as Angornu. During two days, he was half the time in the water—sometimes up to his horse's back. He met with some of the Biddumas, who inhabit the islands in the Lake, and who have a harbour at the western shore, where they trade with the Bornuese. The Lake on the Bornuese side itself is described by Dr. Barth, as an immense marsh, of which the most navigable portion is a deep channel formed by the river Shary, which pours immense volumes of water into it.

On the 7th of May, Dr. Overweg arrived at Kuka, and was welcomed by his travelling companion as one who had made himself already quite at home. They received from the sheikh a good house of large size to live in, and were supplied daily with plenty of mutton, rice, wheat, butter, and honey. Energetic preparations were forthwith made for exploring unknown regions, Dr. Barth directing his steps in a southerly direction, and Dr. Overweg commencing the exploration of Lake Tsad.

It may be added that Dr. Barth's route from Kano to Kuka, is considerably to the north of Captain Clapperton's route, and crossed almost exclusively Bornuese provinces, while the latter extended mostly through the dominion of the Fellatas.

V. DR. OVERWEG'S JOURNEY FROM DAMERGU TO KUKA, *viâ* GUBER AND MARIADI, 11TH JANUARY TO 7TH MAY, 1851.

While Mr. Richardson struck his path towards Zinder, and Dr. Barth towards Kano, Dr. Overweg went almost in an opposite direction, namely, to the west, in order to visit Guber and Mariadi, two independent pagan countries, situated between Damergu and Sakatu, thus choosing a more circuitous and difficult route to reach Lake Tsad than his companions.

State of Dr. Overweg's papers.

At this juncture of Dr. Overweg's journey, it must be remarked, unfortunately, that his Journal begins to show a marked contrast as compared to the previous portion; for while, till then, it was kept in a clear and distinct hand, it exhibits now a confused mass of detached fragments and notes, only at times written out fair, and in most cases, unintelligible; at all events, I have not succeeded in deciphering the contents of a great portion of these papers, and I can only hope that Dr. Barth, if he returns, may be more successful. Thus, in the present instance, I was unable to glean any considerable amount of information, beyond that contained in letters sent home at the time. Altogether, it seems little doubtful that Dr. Overweg, at times, suffered from the climate to such an extent as to render him incapable of great exertion, as in the case of Dr. Oudney, and though he never himself complained or apprehended serious consequences, being possessed with great zeal for his enterprise, it appears that his bodily constitution was not equal to the task.

Mariadi and Guber.

The capital of Mariadi lies in about 13° 45′ north latitude, and 7° 40′ east longitude, about 100 geographical miles, E.N.E. from Sakatu. It is situated in an extensive fertile plain, covered with numerous trees, and is pleasantly surrounded by well cultivated gardens. Mariadi and Guber, or Gober, are bordered by the Fellata dominions in the south, and by the Tuarick countries in the north, and are, in fact, quite surrounded by Mohammedan countries, offering a rare exception in that part of Africa, of Pagans having remained independent of the former. About 50 years ago, the whole of Houssa was conquered by the Fellatas, but some 15 years afterwards, the Assena, *i.e.* the Pagans of Mariadi, rose and threw off their yoke. They now wage war continually with their neighbours, and all the power of the Sultan of Sakatu has proved unavailing to subjugate them, the former being excellent bowmen, and possessing a safe retreat in their woody country. During Dr. Overweg's sojourn at Mariadi and Guber, one of the razzias returned home, highly successful, having conquered the whole of the province of Zamfra. The inhabitants of Mariadi and Guber are mostly a mixed race of Tuaricks and Negroes, and appear to be a fine energetic people. Dr. Overweg spent two months in these countries, where he was most kindly received, and passed his time very pleasantly, frequently being out on hunting excursions with the natives all day long, enjoying a temperature comparatively cool and refreshing. At Mariadi, the Sultan Demmafédi, and at Guber, the Sultani Máiaki, treated the visitor from the far distant country of the Christians with the utmost kindness, who, being able to converse with them in their own language, became well acquainted with their manners and customs, and could in return give them some idea of those of the Christians. They seemed to understand everything, and were full of admiration at the many beautiful objects and conveniences enjoyed by the latter. One thing alone they could not comprehend, namely, that a man should have only one wife. In Mariadi, as soon as a man is able to earn anything, and after he has bought no more than the most simple dress, he lays out all the rest of his fortune in the purchase of wives. If any one wishes to marry, he merely gives from four to eight dollars, or from two to four head of cattle to the parents of the intended, and the marriage is concluded. The man continues these purchases according to the scale of his earnings, but in every house there are several wives. Dr. Overweg, as a doctor, was much consulted, especially for diseases of the eye; every morning the place before his residence being filled with applicants; but the white colour of his skin was an object of horror and aversion, the children, at first, running away crying and in great fright as soon as he appeared at a distance.

His route from Mariadi to Kuka.

Dr. Overweg left Mariadi on the 25th of March, and went nearly due east by Tasawa to Zinder, at which place he arrived on the 1st of April. News of the most melancholy kind greeted him there, namely, that Mr. Richardson had suddenly died, and that Dr. Barth was ill at Kano. He wished to start for the latter place to rejoin his companion there, but was dissuaded from this on account of the great dangers of the road. Shortly afterwards, the gratifying information was received that Dr. Barth's health had been restored, and that he had left Kano; and Dr. Overweg consequently left Zinder on the 11th of April, selecting a route south of that of Mr. Richardson, falling in with that of Dr. Barth at Mashena, situated about 70 geographical miles S.E. from Zinder, which place he reached on the 16th of April. Thence he travelled mostly on the same road as Dr. Barth, and reached Kuka on the 7th of May, where it was his happiness to meet his remaining companion, Dr. Barth, in good health and spirits.

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VI. DR. BARTH'S JOURNEY FROM KUKA TO YOLA, 29TH MAY TO 22ND JULY 1851.

The great object of Dr. Barth and Dr. Overweg being to push their way southwards from Lake Tsad, with the ultimate view to cross the whole continent of Africa and reach the Indian Ocean, they collected beforehand as much information as possible respecting the countries they were about to visit. Thus Dr. Barth, while on his way from Kano to Kuka, received accounts of a country of which till then scarcely more than the name was known, and that it was situated south of Lake Tsad. This country, called Adamaua, Dr. Barth inferred, from all he heard of it, to be the most beautiful country of Central Africa, and a strong wish arose to reach and explore this region at the earliest opportunity. He, therefore, on his arrival at Kuka, directed all his energies to the realization of his wish, and so far succeeded, that soon after Dr. Overweg's arrival at that place, he was enabled to start for the south, leaving his companion to navigate Lake Tsad. The following lines, which I have been kindly allowed to extract from his official despatch to H. M. Foreign Office, describe his journey in his own words.

Adamaua.

"On the 29th of May 1851, I left Kuka, accompanied by a kashélla or captain, of the name of Billama, and by Mallem Katori of Yakoba, together with three servants. The kashélla was assigned to me officially by the sheikh of Bornu, and rather against my wish. Mallem Katori, an estimable man of great age, from having resided in Adamaua for a long period, and having, moreover, made extensive journeys to other far distant countries, was to me a valuable companion.

Plains of Bornu.

"We proceeded in a southerly direction through extensive plains of great fertility, and scattered either with small villages of the Bornuese, or the encampments of the wandering Shuas. The country is dried up during the rainy season, and is covered by a rank weed (*ashar* in Arabic, *kayá* in Bornuese) appearing every year after the harvest, which here consists of ghussub, ghafuly, cotton, and a little indigo. At first but few trees were seen—the small talha, but even these were welcome to persons coming from the naked environs of Kuka. The larger trees appeared further to the south, particularly the acacia, the wild fig-tree, the *garhi*, a fine tree with small leaves and a black fruit resembling the cherry, together with the *haure*, another magnificent tree. The country continues a plain as far as Mabani, and is much frequented by giraffes after the rainy season. We crossed the dry bed of a river, tributary to the Shary, and flowing eastward by the town Dikoa. Mabani is a market place, and belongs to Uje, undoubtedly the finest, most fertile, and most densely inhabited district of Bornu, resembling the highly cultivated region round Kano, with which important place it is connected by a caravan road passing through Gûjeba, Mesaw, and Katágum. The most important town of Uje is Uje Kasûkula, distant from Mabani 12 miles S.S.E., and four days journey, or about 85 miles W.N.W. from Mora, the capital of Mandara. Near Mabani is Uje Maidûguri, the residence of the governor of the district, Malay Ibrâm. Nineteen miles south of Uje Kasûkula is Yerimari, formerly a place of importance, but now much reduced by the slave-hunting expeditions, which are continually going on in this region.

District of Uje.

Territory of the Marghi.

"About eight miles south of Uje Kasûkula commences the territory of the Marghi, formerly a very powerful tribe of pagans scattered over a tract of probably 10,000 square miles in extent, bounded on the east by Mandara, and on the west by the territory of the Baber, another pagan tribe belonging to Bornu. A great portion of the country of the Marghi has been devastated, and is now covered with thick forest, the inhabitants having been taken away as slaves. Nevertheless they are said to be able still to collect a force of about 20,000 men, well armed with bow and arrow, three or four spears, and a peculiar weapon of iron for close fight, about two feet long and three-quarters of an inch broad, with a curved point at the top. The Marghi are a very fine set of people, tall and extremely well-built; the colour of some is black, of others copper colour. They have a language of their own. Their villages consist of groups of huts belonging to separate families, and the huts are better than any I have seen in Bornu. The Marghi are quite naked, with the exception of a simple band of leather passed between their loins and fixed round their girdle, and a profusion of neatly made rings of iron and ivory round their arms and legs. The females perforate their underlips, and the males their right ear, but neither of them make any incisions in their face or body. The Marghi worship their god, called *tambi*, in holy groves, of which each village has one, consisting of magnificent trees, surrounded by a ditch, and forming a kind of citadel, whither they retreat during war with all their property and what is most dear to them. They have also a rock near Kobtshee, the capital, which is the object of great veneration, and on which they perform ordeals very similar to those in the middle ages. The death of an old man is celebrated with rejoicings, that of a young one with grief and lamentations.

Description of the Marghi.

"The territory of the Marghi lies between Bornu and Adamaua, and is claimed by both. Travelling in this country is considered very dangerous, which we ourselves experienced in going, whereas on my returning I was treated with great kindness. Our route from Yerimari went first through a thick forest, densely inhabited by elephants, and very difficult to pass during the rainy season, on account of the ground being converted into extensive marshes and swamps. Nine miles S.S.W. from that place is the district of Mólgoy, five miles in extent, greatly plundered by the Bornuese. Next is Isge, a fine large village, scattered over nearly four square miles of ground, with magnificent groups of trees. Here I had an extensive and uninterrupted view of the Mándara mountains, which form an entirely isolated group, and do not belong to an extensive range of mountains which has been erroneously supposed to stretch through that part of Central Africa in a direction of E.S.E. to N.N.W. At the western foot extend the large fertile plains which we had partly crossed, and which were partly before us. I fixed Mount Mindif, seen by Major Denham, by several bearings. It forms a bare summit of considerable height, and is on that account known all over the country, but its dimensions are so small that a single Fellata village encircles its base. Between Isge and Lahawla, another place of the Marghi, we passed the first perennial rivulet that I had seen since leaving the Mediterranean. It contained plenty of large fish, and is a tributary to the Shary, taking its course through the territory of Gámergu. At Lahawla we passed some rocks, but the country continued in the character of a plain for about 20 miles beyond, when we crossed a small ridge of granite rocks, marking the commencement of a hilly district extending eastwards, but sinking into the plains westwards. All the hills I saw were of granitic formation, covered up to their summits with trees and vegetation, and inhabited by independent pagan tribes, particularly the Hólma, lying to the right of our route, with about 2,000 horse, the Kilmagaia, and others.

Mándara Mountains and Mount Mindif.

"Uba is the northernmost place of Adamaua. From this place all the country to the south was covered with most splendid herbage, and enlivened with numerous herds of cattle belonging to the Fellatas. The atmosphere was now cool and refreshing, the sky covered with clouds during the greater part of the day, and thunderstorms occurred almost every day. The country were altogether a rich and beautiful appearance, and the huts of the inhabitants are built with more solidity than in the northern regions of Sudan, as the rainy season lasts seven months in Adamaua. The population of the country is considerable, large towns being met with every three or four hours, with smaller villages between, exclusively inhabited by the slaves of the ruling Fellatas. The slaves do all the work; and every Fellata, down to the very poorest, possesses at least from two to four slaves. Indeed, in no country of the world is slavery carried on to such a degree as in Adamaua; where slaves, in addition to cattle, are considered as the foundation of the wealth of the people. The chiefs of the country have countless multitudes of these poor creatures. There are few slaves, however, exported from Adamaua, except those of the Dama tribe, east of Yola, the capital of the kingdom, as they do not find a ready sale in the Sudan markets, on account of their great mortality when taken away from their mountainous country. Nevertheless they form, with ivory, the chief articles of commerce. Ivory is extremely cheap in Adamaua, on account of the great number of elephants. In Baya, 12 days journey south of Yola, the elephants are found in still greater numbers. The chief articles of import are túrkedies, robes, glass, pearls, and salt. Cowries have no value in this country, the current medium of barter consisting of narrow stripes of coarse cotton, called gébbega.

Frontier of Adamaua; magnificent country.

Slaves.

Ivory.

"Saraw, distant upwards of 50 miles from Uba, is the chief town of the northern part of Adamaua, and is a considerable market place. All the ivory, however, is taken to Fatauel, or Patawel, situated on the road to Loggun, and about 20 miles east of Mount Mindif. This is the great ivory market of this part of Central Africa. Previously to reaching Saraw, we passed a place called Umbutúdi, surrounded with beautiful scenery, where the geginya, a peculiar species of palm-tree, appears. The people of this tract had never seen a stranger before my visit, and received me with the utmost kindness and hospitality, taking me altogether for a superior being.

"The most important day, however, in all my African journeys, was the 18th of June, when we

Discovery of the River Benué (Tschadda).

1851.

reached the river Benué, at a point called Taépe, where it is joined by the river Faro*. Since leaving Europe, I had not seen so large and imposing a river. The Benué, or "mother of waters", which is by far the larger one of the two, is half a mile broad, and 9½ feet deep in the channel where we crossed it. On our return, 11 days later, it had risen 1½ feet. The Faro is five-twelfths of a mile broad, and 3 feet deep, which increased to 7½ by our return. Both rivers have a very strong current, and run to the west into the Kowara. We crossed the Benué in boats made out of single trees, 25 to 35 feet long, and 1 to 1½ feet broad, and forded the Faro, which latter was accomplished not without difficulty, on account of the strong current. The Benué is said to rise nine days journey from Yola in a south-easterly direction, and the Faro seven days journey distant, in a rock called Labul. During the rainy season the country is inundated to a great extent by the two rivers, which rise to their highest level towards the end of July, and remain at that level for 40 days, namely, till the first days of September, when the waters begin to fall. Both rivers are full of crocodiles, and the Benué is supposed to carry gold. After having crossed the rivers, with some difficulty to the camels, we passed at first through some swampy ground, then through a very fine country thickly inhabited, and reached Yola, the capital, on the 22d of June.

Yola.

"Yola is the capital of Fúmbina or Adamaua, and the residence of the Sultan Mohammed Loel, son of the Mallem Adama, who conquered this country, and on whose account it has received the name Adamaua. It is situated in a rather swampy plain, inundated during the rainy season by an inlet of the river. It covers a large area, its dimensions being 2½ miles from east to west, and 1½ miles from north to south. All the dwellings, except the houses of the Sultan and his family, consist of huts, built of mud. Having rode up to the Sultan's palace, we were lodged in the house of one of his chiefs, Ardo Gammawa, My letter of recommendation from the Sheikh of Bornu, was delivered, and made upon the whole a good impression. It represented me as a stranger, a Christian,—not without his "holy book", who visited Adamaua, in order to explore there and "admire the works of the Almighty God." These latter words made the Fellata chief violent and unmanageable. But worse than this, was the letter delivered by my companion, the kaskella, in which the disputed frontier-territory was once more claimed by the Sheikh of Bornu, and this in a rather energetic manner. Consequently, on the 26th of June, after a three days stay in Yola, a message from the Sultan was delivered to me, requesting me to leave the town, and return the way I came. This most vexatious order was delivered by Mallem Mansúr, the brother of the Sultan himself, and next to him in influence, and who had shown me much kindness during my stay, and now endeavoured to appease my vexatious feelings. He said that I would be most welcome to the Sultan, if I brought a letter from his master in Sakatu, whose slave he was. I gave to Mallem Mansúr the presents destined for him, who then announced to me that the Sultan, his brother, had sent two slaves as a present for myself, and requested the present intended for him. I declared, that I must decline his present, for in addition to it being a sin for me to possess slaves, I neither would give nor receive the smallest present from a Sultan who ordered me to leave his country in the manner he had done. Shortly after this we left Yola, accompanied by two horsemen, who had orders to conduct us safely to the frontier.

Dr. Barth forced to return.

"With regard to the height of the mountains seen by me, I must observe, that the reports of snow-capped mountains in that region of Inner Africa are without foundation, as not even the Alantika, the highest mountain of Adamaua, and probably exceeding 10,000 feet in height, reaches the limit of snow. Most of the other mountains in Adamaua seem only 3000 feet above their basis."

Dr. Barth appears to have returned to Kuka on the same route he came, where he safely arrived on the 22d of July, after an absence of scarcely more than two months. In another communication, he speaks in glowing terms of the extensive valleys and plains of Adamaua and their great fertility. The rainy season lasting, as it does, seven months, produces fine pasture-grounds, which furnish food for innumerable herds of cattle. The most common produce of the country is ghafuly. Rice is also cultivated, for which the valley of the Benué in particular is well suited,—it being covered for 40 days by the floods of the river, which rises to a height of from 40 to 50 feet. From the reports of the inhabitants, Dr. Barth feels certain that gold is found in Adamaua.

Importance of the results of this journey.

The results of this journey, though short, are unquestionably the most important, both in a geographical and commercial point of view, of those which have yet been achieved by that expedition, for the magnificent river discovered by Dr. Barth holds out the hope, that by its means will be laid open the vast unknown interior of Africa to our knowledge, as well as to the civilisation and commerce of the world. Two geographical questions of importance are also set at rest by Dr. Barth's journey, namely, the non-existence of a great longitudinal mountain chain which was supposed to stretch across Central Africa in the region traversed by that traveller, and the non-connection of Lake Tsad with the Kowara. For instead of the river Yeou being a tributary to the Chadda, it is the Benué which forms the upper course of the latter river.

When in Yola, and referred, by the Sultan of Adamaua, to the great chief of the Fellatas at Sakatu, Dr. Barth formed the determination to endeavour to obtain on a future occasion the friendship of that mighty man who reigns paramount over all the Fellata dominions. This determination the traveller has, since Dr. Overweg's death, been endeavouring to realize by his journey to Sakatu and Timbuktu, in which it is sincerely to be hoped he may have always remained on friendly terms with the Fellatas.

VII. DR. OVERWEG'S EXPLORATION OF LAKE TSAD, 28TH JUNE TO 8TH AUGUST 1851.

Launching the "Lord Palmerston".

The boat for exploring Lake Tsad and its numerous islands had safely, though with great trouble, been conveyed from the Mediterranean across the Desert to Kuka, laden in pieces on camels. The sheikh of Bornu being on terms of war with the nations inhabiting the eastern shores of Lake Tsad, a journey round the lake was found impracticable, and Dr. Overweg therefore determined on a cruise on the lake during the absence of his companion. With the assistance of Arab carpenters, he put the boat together, and named it "Lord Palmerston", in grateful acknowledgment of his Lordship's patronage. It was launched at Maduari, east of Kuka, when a vast number of people flocked together to see and admire the strange boat. A harbour near this point is the only place where an occasional trade is carried on between the inhabitants of Bornu and those of the islands in the lake, the Biddumas. Two of their boats happened to be in that harbour when the "Lord Palmerston" was launched. Dr. Overweg soon became friendly with the crews, and engaged two of the men as sailors and interpreters, in addition to whom he was accompanied by his servant, a Tripolitanian boatman, and Fugo Ali, a Sugurti chief.

On the 28th June, Dr. Overweg embarked at Maduari, in company with two of the Bidduma boats. For the first seven hours they had to make their way through narrow channels between small islands, and through dense reeds of a luxuriant growth, infested by herds of *ungurutus*, or hippopotami, which were no less disturbed and terrified by the boat with its white sails than the Biddumas who were occasionally met with, either in boats or swimming about with great rapidity on pieces of floating timber. The hippopotami would often appear with their heads above the water, and gape at the moving sails. Towards evening the

The *inkibul* or open portion of the lake.

open water of the Sea was reached; it is called *inkibul*. At night the boat was tied to a floating island of reeds, enlivened by hosts of phosphorescent insects. On the following day a north-easterly course was steered through the vast open expanse of the lake, the average depth of which was found to be eight to twelve feet. Floating islands of reed were met with in that open portion of the lake, but scarcely any fishes, hippopotami, or water-fowl, all of which were plentiful in the narrow channels towards the shores.

On the 30th of June, Dr. Overweg continued his course with a fresh breeze, in which the punts of the Biddumas, not having any sails, were unable to keep up with the "Lord Palmerston". Towards the

The islands of the Biddumas.

evening the first island of the Biddumas—Kangallam—was reached, after previously sighting to the right hand the small island of Kamassa. Rounding the island of Kangallam, and steering a more easterly course, Seurom, a larger island, was passed, and Marea was reached, at which they landed for the purpose of taking in wood. The depth of the lake at this point was six feet only, and further on nine feet.

Leaving Marea, a great number of islands were passed, of which Maddeh, Jerom, and Berom, were the principal ones. Near Marea the fishes reappeared. At times the open lake was seen, stretching southwards through the narrow channels of the adjoining islands. In the same direction was seen an island covered with magnificent trees and herds of cattle. The night was passed close to the island of Berom. On the 1st and 2nd of July, the voyage was continued in an easterly direction, through similar intricate channels formed by innumerable islands, some of which were covered with fine pastures and trees, and inhabited. On the latter day the large island Belarigo was reached, but previously they met a number of its inhabitants, from whom they learnt that their chief, having heard of Dr. Overweg's visit, had gone to the Bornuese shore to fetch him, and conduct him safely to his residence. No less kind than this act was the reception of the visitors in the harbour of Belarigo island. Immense multitudes of people collected round the boat to welcome the Christian, the salutation of the men consisting of shaking by the hand, and of the women by unceasing exclamations and songs. Dr. Overweg was conducted to a pleasant eminence to pitch his tent, and abundance of milk and provisions were brought to him and his companions. Late in the evening a grand procession took place to honour the guests, who were continually assured of the friendship of their entertainers. Next morning, the whole of the inhabitants, old and young, went to cultivate their ghossub fields; and the afternoon was spent in festival assemblies, dancing, and rejoicings, on which occasion Dr. Overweg delivered his presents, consisting of a few tobes, pearls, needles, rings, and sugar, which were distributed among the community of the island.

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Belarigo Island.

Dr. Overweg stayed four days in Belarigo, and was treated invariably with the greatest kindness. The island of Belarigo stretches from north to south, and is about four miles long, and between one and two miles broad. It is well cultivated with ghossub fields, and possesses fine pastures with cattle. The inhabitants assert that neither to the east of that island, namely, towards the Waday shore, nor to the north, towards Kanem, did the lake present a similar expanse of water as on the western side, between the islands and the shores of Bornu. The shores of Waday were said to be waterless and mostly uninhabited, having been devastated during the recent wars. The chief places of the Bidduma were thus enumerated: Doji, Muri, Foromm, Fannekaböga, Bulenn, Yella Kororom, Fanneguria, Bellurom, and Timbern.

On the 7th of July, Dr. Overweg left the island of Belarigo to extend his cruise eastwards. The same labyrinth of channels and islands continued as before, but the depth of the sea was somewhat greater, namely, 15 feet. After upwards of two hours sail the large island of Doji was reached, where Dr. Overweg halted. Some of the people of Belarigo had accompanied and followed him, not in boats, but swimming across the narrow channels with their hand-floats. The island of Doji possesses cotton fields. To the south-east of this there are no other inhabited islands. Opposite Doji, to the east, is the island of Iba, distinguished by the abundance of trees. On the 9th of July, the large island of Guria was reached, where Dr. Overweg was received with the same hospitality and kindness as in Belarigo.

Guria Island.

The island of Guria is about the same size as Belarigo, and densely inhabited, containing no less than six considerable villages; namely, Shikókuro, Buggoromi, Mudi, Yirrebu, Ingellemia, and Kaia. One day's journey to the Eastward of Guria, with only two channels between, is Ingelmade, a district formerly inhabited by the Kanembu, and now belonging to Waday. The great *inkibul* of Bornu (the open expanse of the Lake) ceases in a south-easterly direction at Ingelles, one day's journey from Guria. On Guria and the islands between it and the shores of Waday, live a great number of Kanembu, who formerly inhabited the district of Ingelmade, which they abandoned before the ravaging hordes of Waday, seeking an asylum among their neighbours on the Lake. Having been received with open arms by the Biddumas, they settled down on their islands, cultivating ghossub and rearing large herds of goats, but no oxen.

Return of Dr. Overweg.

It appears that Dr. Overweg was unable to extend his tour further to the East, on account of the war between the people of Waday and the Biddumas, which was not yet terminated, for it was only three months previous to Dr. Overweg's arrival, when the former made a great attack, advanced nearly as far westward as the island of Guria, and took away about 1000 head of cattle from their enemies. On the 12th of July, Dr. Overweg commenced his return, first to Belarigo on nearly the same track which he came. During his second stay in Belarigo dissensions arose between the inhabitants of that island and some of their neighbours, which caused considerable disturbance. From Belarigo, Dr. Overweg made his way back to Maduari on a more northerly route, and arrived at his starting-point on the 8th of August.

Geographical features of Lake Tsad.

The fact that the waters of Lake Tsad are fresh and clear, is fully confirmed by Dr. Overweg. A new feature now first brought out by the researches of that traveller is its comparative shallowness, the soundings taken by him ranging between 8 and 15 feet. The depth and volume of water, as well as the superficial extent of the Lake, varies greatly in different seasons and periods. Inundations and droughts succeeding each other produce such changes that the channels between various islands through which Dr. Overweg sailed without obstruction, are frequently laid dry, and at other times the islands are inundated to such a degree, that the inhabitants have to retreat with their property to the ranges and summits of the sandhills found in many of the islands. The greater portion of the Lake is occupied by a vast labyrinth of small islands, the largest of which were found by Dr. Overweg not to exceed five miles in length. The chief cluster visited by that explorer, commences at a distance of about 15 miles from the Western shore, leaving a space of open water of that extent along those and the Southern shores; whereas it appears from the reports of the natives, the whole North-eastern portion of the Lake is covered with a continuation of that intricate Archipelago. In addition to the Bidduma Islands, smaller groups of islands are dotted along the shores, covered or lined with tall reed, together with floating islands of the same plant and other vegetable matter. Between these and the Bidduma islands extends that large open space of the Lake which is called *inkibul* in the Bidduma language, meaning "white or clear water", in distinction from the narrow channels near the shores which have a muddy appearance, and are denominated "black water". Large numbers of hippopotami, called *ungurutus* in the Bornu language, together with crocodiles, infest the lake and its banks, but they are scarce in the open water, and chiefly confined to the narrow channels. It is curious to observe, that the hippopotami found on the Western, the Bornu shores of the Lake, are of a black colour, and those among the Bidduma islands of a light brown or reddish colour. There is a variety of fish in the Lake, which are likewise more abundant near the land or islands. Turtles of an enormous size are said to exist in the Lake, but Dr. Overweg did not see any. As regards the circumference and size of the Lake, it would appear from Dr. Overweg's researches to be much smaller than assumed from Major Denham's observations, for while according to the latter its width from West to East is about 130 miles, according to the former it would be reduced to an average width of 60 to 80 miles. This question will, however, not be definitely settled till further observations, and more particularly till the circuit round the Lake has been made. Shortly before his death, Dr. Overweg had succeeded in obtaining from the Sheikh of Bornu the sanction, together with the promise of a suitable escort, for making the circuit round the Lake. Until then, the political condition of the countries on its Eastern side had not permitted a realization of that project. The innumerable islands in the middle and on the North-eastern side of the lake are inhabited by the Biddumas, an independent Pagan nation, who have not only never been conquered by any of their powerful neighbours on *terra firma*, but are quite as much masters of the shores of the lake inhabited by the latter, for they carry on an uninterrupted piratical war with the Mahommedan nations who live around it. They are a fine active race of people, mostly of a jet black colour, but also of a dark brown. They have regular features, with two small scars under the temples, some with prominent cheekbones, and a round-pointed nose. They are seldom tall. They are decently dressed, both males and females, in robes mostly of a black colour, have sandals, and wear a profusion of ornaments, such as necklaces of white or red pearls, and bracelets neatly made of ivory. The women wear a most singular head-dress, somewhat like two butterfly wings, of about 15 inches in length, extending horizontally from the head behind. The chief weapons of the men are the lance and the spear, with which they go to war, and chase the hippopotamus and crocodile. The Biddumas have a language of their own. They allow a good many Shuas and Kanembus to live among them, and have acquired from the former the Arabic to some extent. They are divided into five divisions, all living on the islands. They possess many boats made of planks, and 40 to 50 feet long. One measured by Dr. Overweg was 43 feet long, 6 feet broad, and 2 feet deep. They also use small floats made of reed. Sails are unknown to them, and they propel their boats with long poles, which almost everywhere reach the bottom of the Lake, scarcely using any oars, which are exceedingly small. As may be supposed, they are expert swimmers. They cultivate ghossub, and a little cotton, and possess numerous herds of cattle, both oxen and goats, as well as horses. Dr. Overweg was very kindly treated, and hospitably entertained during his sojourn among them.

The Biddumas

* In latitude 9° 2' north, and longitude 14° 0' east Greenwich, 235 geographical miles to the south of Kuka, and 415 geographical miles in a direct line east by north from the confluence of the Chadda with the Kowara.

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VIII. JOURNEY OF DR. BARTH AND DR. OVERWEG TO KANEM, SEPTEMBER TO NOVEMBER, 1851.

No sooner had Dr. Overweg rejoined his companion at Kuka, than they planned another journey to be undertaken conjointly. Owing to the recent death of the Sultan of Waday, a country lying to the east of Lake Tsad, the whole of that region had been involved in acivil war. The Uelad Soliman (the well-known powerful Arab tribe, formerly living near the Mediterranean, whence they were driven away by the Turks and subsequently occupied the regions to the north and north-east of Lake Tsad, forming an alliance with Bornu,) determined to profit by this dissension of the people of Waday among themselves, and to invade their country. Under their protection the travellers hoped to be enabled to explore the countries to the north-east and east of Lake Tsad, as well as the mountainous region of Borgu, situated about midway between that lake and Egypt, and never yet visited by any European. Their kind host, the Sheikh of Bornu, considerately equipped twenty Arabs expressly for the purpose of conducting them safe to the Arab encampment.

River Yo or Yeou.

On the 15th of September the travellers and their escort left Kuka, together with a small troop of soldiers sent to the Uelad Soliman by the Sheikh of Bornu. They struck their route direct for the north-eastern point of the lake, crossing the river Yo, or Yeou, which runs with a strong current towards Lake Tsad. During a short stay at that point, Dr. Overweg traced the river to its embouchure into the lake near the large town of Bosso. Continuing their journey northwards, and leaving Woodie, a place known from Denham and Clapperton's journey, to the left, they reached the north-eastern extremity of Lake Tsad. From their encampment at that point, they had a fine view over the lake, which in that portion is covered with many large islands, beyond which extends the *inkibal*, or open water. During the night, the fires of the Biddumas were seen. Pursuing their route in an easterly direction along the swampy banks of the lake, large herds of elephants were met with and seen in the distance. At Birri, the travellers left the lake, and followed a north-easterly direction. On the 1st of October they reached the encampment of the Uelad Soliman near Bir-el-Korno, and were received in a grand style by the Arab horsemen, who paraded their

Camp of the UeladSoliman

celebrated equestrian evolutions. The camp consisted of about 100 Arab families, and a division of Tibbus, together with about 5000 camels, several thousand head of oxen and sheep, and 200 horses,—the whole presenting an imposing and novel spectacle to the travellers, particularly when on the march. From Bir-el-Korno the army moved on towards Maw, the capital of Kanem, through districts situated northward from that place, and inhabited by Tibbus. The Western tribes of the Tibbus of Kanem were already subjugated, and the Eastern ones could not stand the first attack of the Arabs, but fled, and left their herds of camels, oxen and sheep in the hands of the enemy. They rallied, however, and succeeded in raising all their neighbours in order to prevent the further progress of the Arabs. The latter had already approached Maw to within a few hours' distance, when, with an overwhelming force the enemy made an

Defeat of the UeladSoliman and return of the travellers.

attack upon their camp, which proved as unexpected as it was decisive. The Uelad Soliman were defeated and put to flight so suddenly, that Barth and Overweg saved their lives and instruments only by a quick retreat. The army made a stand in Western Kanem, intending to renew their attack upon the countries eastwards, as soon as an auxiliary force of the Bornuese should have joined them. As this would have caused an indefinite loss of time to our travellers, besides the uncertainty of their progress, as depending upon the chances of an invading army, they determined to return at once to their head-quarters at Kuka, where they arrived without further mishaps on the 14th of November. If the travellers were somewhat disappointed in the results of this excursion, the state of their health was materially improved by it, having thus avoided the dangers of passing the rainy season at that unhealthy place Kuka. Already before setting out on this tour, Dr. Barth had suffered under repeated attacks of fever, which had produced considerable weakness. During the journey to Kanem, he rapidly recovered his health; the pure, though hot atmosphere, with plenty of wholesome and nourishing food, particularly camel's-milk, producing such an effect upon the two travellers, that they returned to Kuka greatly strengthened and refreshed.

Physical features of Kanem.

Kanem, the region explored by the travellers on this tour, is very similar in its physical features to Damergu, the Tuarick country, situated from 200 to 300 miles farther west in nearly the same latitudes. Like the latter, it forms a link between the dry Desert regions and the sultry Sudan with its regular rains and floods. Already on the River Yeou the tropical rains were noticed to have decreased. Leaving the shores of Lake Tsad at Birri, the ground was found to be ascending in vast undulating sandy plains, thinly inhabited, but densely covered with trees, and full of antelopes, lions, hyænas, and jackals, together with great numbers of elephants and ostriches. The travellers killed a serpent of the Python species, 18 feet in length. The trees consist mostly of *mimosa* species, the tholuck and suak. Where trees are few, herbage of some variety covers the ground. In Western Kanem there is a total absence of rocks and stones, and the undulations or irregularities in the surface appear not in the usual forms of valleys or river-beds, but in circular or oval depressions, frequently of most remarkable regularity. In these depressions, the wells are found, and a more luxuriant vegetation than in other parts. In the eastern portion of Kanem, towards Maw, these curious forms disappear and make way for Wadis, stretching from east to west, and containing dense forests of palm-trees, fields of maize, and even wheat. A peculiar feature in the flora of Kanem, is that date-palms and doum-palms flourish together in a similar way as on the northern borders of Air.

The Tuaricks and Tibbus.

But the populations of the two countries present a great contrast: the inhabitants of Air, the energetic Tuaricks, reside among their rocks of granite, and are ruled by a well regulated government. Their innumerable herds of camels find sufficient pasturage in the Wadis, but the people themselves find their subsistence solely in the laborious commerce of salt, for which they receive corn and other provisions, slaves, clothing, weapons, and in short all their necessaries of life. The Tibbus, of Kanem, on the other hand, do not present so favourable a picture of regulated power and successful activity; their numerous small tribes live isolated in secluded valleys or wadis, and have scarcely any intercourse between them, except when plundering each other. When attacked, they show no courageous resistance, but retreat into the thickets of their palm-forests, or into the caves of their rocks or subterranean lurking-places. Recurring again to the general similarity of Kanem with Damergu, it is worth noticing that while in Kanem the vegetation is chiefly confined to the Wadis, and circular depressions or hollows, in Damergu all plains are covered with corn. The latter, however, possesses no date-palms. Antelopes and lions are found in both countries, but Damergu is characterised by the occurrence of the giraffe, Kanem by that of the elephant. As to the political condition, Damergu has always been in the hands of the Tuaricks, who have made it their granary and slave-colony. Kanem again, ever since the power of the original rulers was diminished, has been tributary to Waday and Bornu alternately. For the last ten years, the governor of Kanem was an ally of the Uelad Soliman; but since 1850, when the latter were beaten by the Tuaricks of Damergu, Kanem has been governed by Waday, and it was for the purpose of again wresting it out of the hands of Waday, that the united army of the Arabs and Bornuese was sent forth. A few days before Dr. Overweg's death, namely, in September 1852, the news reached Bornu, that Kanem had, at last, fallen into the power of that very army to whose chances he and his companion confided themselves nearly a year previously.

IX. JOURNEY OF DR. BARTH AND DR. OVERWEG TO MUSGO, 29TH NOVEMBER 1851 TO 1ST FEBRUARY, 1852.

A Bornuese razzia to the far South.

On reaching Kuka, the travellers learnt that a large army of the Sheikh of Bornu was about to leave for the south, to castigate the people of Mandara, a country already known through Major Denham, who there met with so narrow an escape on a similar occasion. Dr. Barth and Dr. Overweg, far from being discouraged by the dangers their predecessor had undergone, or by their own narrow escape in their late journey to Kanem, determined to accompany the Bornuese army. The 25th of November was the day of departure. The army consisted of upwards of 10,000 horse, and the same number of foot soldiers, with innumerable trains of camels and other beasts of burden.

The direction of the route of the expedition was at first SSE., passing successively the towns of Angornu, Kukia, Yedi, Martè, Alla, and Dikoa. The latter is a very considerable place, situated on the Komadugu (or River) of Gamergu. The region thus far traversed is a vast plain, with few trees, but highly cultivated with ghossub, as well as cotton and onions, and inhabited by the Kanori. From here to the south extends a region inhabited by the Shuas, less cultivated than the former, and full of elephants, lions and giraffes. The towns of Affage and Sogoma still belong to the Kanori and are like the preceding ones, surrounded with walls. As far as Sogoma the direction of the route was the same as that followed by Major Denham in 1824, on his tour to Mandara; from that point it turned more easterly. At Diggera the army was met by a mission of the Sultan of Mandara, who promised obedience and submission to the Sheikh of Bornu. Matters having thus been peacefully arranged, the plan of the expedition to invade that country, was now abandoned, and the operations directed against the countries lying south-east from it.

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In traversing the country inhabited by the Shuas, fields of rice, their chief means of subsistence, were often found trodden down and devastated by elephants. Between this tract and the Musgo territory the wilderness of Fili Obaja intervenes, which is partly covered with forests, containing scarcely any inhabitants, but numerous lions and large herds of elephants and giraffes. The territory of Musgo begins

Country of the Musgo.

in about latitude 10° 55′ north, on entering which the travellers were struck with the signs of domestic comfort and active industry that were apparent in the villages. Adishen is a small country situated to the northwest of Musgo, and allied, or at least on friendly terms, with Bornu. The inhabitants of Musgo evidently showed great want of unity in resisting or repelling the army invading their country; they retreated as their foe advanced, and only small skirmishes, and no pitched battle of any extent took place. Thus without serious obstruction the expedition reached Wulia, situated under the 10th

District Wulia

parallel of north latitude, an exceedingly fertile and densely inhabited district. Emerging from a forest, the travellers were greeted with a fine view of the magnificent landscape before them: a rich plain, dotted over with groups of huts, interspersed with cultivated fields and ponds and groups of the finest trees. Among these the giginya-palm now first appeared, a tree peculiar to the tropical regions of Africa, and having been first met with by Dr. Barth on his journey to Adamaua at Umbutudi, in nearly the same latitude. Pools of rain-water, called *ingeldjam*, which only during the rainy season become connected and form running rivers, were here of a size and depth sufficient to carry boats. Near such an *ingeldjam* the army formed a strong and well protected camp, as a centre from whence to plunder the country around far and wide. Two of these razzias were accompanied by the travellers, one in a north-easterly direction, the other east-south-east, when at both times a large river arrested further progress. This river is the

River Serbenel.

Serbenel, the chief tributary to the Shary. At the upper or southern point visited by Dr. Barth, it is divided into two arms, the western being only one and a half to two feet deep; but the eastern branch, though narrower, was impassable on account of its depth, which was estimated at least at ten feet. Where the river was undivided it was, naturally, still less fordable, and all those who ventured into it were killed by the enemy, who lay in safe ambush in their boats. The western banks of the Serbenel are high and steep. The people of Musgo are a well-built though not a handsome tribe. The face of the women is horribly disfigured by an ornament of ivory which they wear in the upper lip. They cultivate their fields with care, and produce chiefly ghafuly. They have oxen and horses, but mostly of a small growth.

Return of the razzia.

After having collected a booty of about 5,000 slaves and 10,000 head of cattle, the army commenced their return by a more easterly route, and the travellers safely reached Kuka on the 1st of February, 1852.

Geographical results.

The geographical results of this journey are highly interesting. The whole of the country explored and discovered by Dr. Barth and Dr. Overweg on this occasion, namely, upwards of 200 geographical miles south-east from Kuka, is an immense level plain, almost imperceptibly inclined towards Lake Tsad. The country of the Musgo, in particular, presents so flat a surface, that the drainage is most imperfect, and an immense number of sluggish river-courses are everywhere met with. These collections of water are mostly shallow, running over a surface of loam covered with herbage, and even during the rainy season their current is scarcely perceptible. The Arabs call them *sil*, the Bornuese *ingeldjam*, in contradistinction to the *Komadugu*, *i. e.*, sandy river-bed or lake. The whole country is intersected by them, and it is difficult to say which way they run. Some of them, being very large, appear in the rainy season like mighty rivers. In no other part of Central Africa had these peculiar watercourses been met with by the explorers. These rivers belong to the basin of the Shary, but a few miles south-west from Wulia, at Dawa, rises the river Kebbi, which is a tributary to the Benuë (Benuech). It follows, that

Water parting between the basin of Lake Tsad and that of the Kowara.

between Wulia and Dawa is the waterparting between the basin of Lake Tsad and that of the Kowara. From the peculiar nature of the country, its flatness, together with the abundance of water and magnitude of the floods, it would not be surprising if the two rivers, during the rainy season, were united by those shallow watercourses, so that an uninterrupted water communication, even if for small boats only, were thus formed between the Kowara and Lake Tsad. Except in the Mandara territory, no mountains were seen by the travellers, and only a few granitic cones of trifling elevation were noticed rising out of the vast plain at Waza and a few other spots. The whole region is one of great fertility, alternately inhabited by a dense population, the uninhabited and uncultivated districts being the homes of vast herds of elephants, giraffes, lions, and other wild animals.

Rectification of Denham's furthest.

By this journey, and by that of Dr. Barth to Yola, the country of Mandara and Mount Mindif, which have become so well known through Major Denham's exploits, are more correctly laid down on the map, as well as the extent of the former, which is very small, now ascertained. Mount Mindif, hitherto forming the furthest point south of Lake Tsad seen by any European, was laid down nearly 100 miles too far to the south in Denham's map.

X. DR. BARTH'S JOURNEY TO BAGIRMI, END OF MARCH TO 29TH AUGUST 1852.

After a short rest of a few weeks, the two travellers left Kuka at the end of March 1852, on two distinct journeys: Dr. Barth going in a south-easterly direction towards the Nile, and Dr. Overweg in a south-westerly direction towards the Kowara. Dr. Barth, directing his way to Maseña, the capital of Bagirmi, passed successively the towns of Angornu, Yedi, Affadé, Debábe Ingaya, and Kala, and reached Karnak Loggene, the capital of Loggene (commonly called Loggun), situated on the River Loggeme. Crossing this river, he came to the Shary or Asu at the ferry opposite the small town of Asu, forming the

The River Shary.

western boundary of Bagirmi. That country being then on friendly terms with Bornu, Dr. Barth had hoped the letters of recommendation from the Sultan of the latter to that of the former would afford him a good reception and kind assistance. But he was greatly disappointed. Owing to the intrigues of a

Dr. Barth's progress arrested.

native of Bagirmi who had recently returned from Kuka, and who considered himself not sufficiently honoured by the Sultan and the Vizier, the most absurd rumours respecting the object of Dr. Barth's visit had been spread about, namely, that he was a dangerous sorcerer, and that he had come to cause mischief to the people and to dethrone the Sultan. Accordingly a most determined opposition was shown him at Asu and he was not allowed to cross the river at that place. Undeterred by these difficulties, Dr. Barth by a circuitous route went to another ferry at Mele, about twelve miles lower down the river, where he succeeded in crossing the river and thus entering the kingdom of Bagirmi, but his further progress was again forcibly stopped, and it was only allowed him to send his letters of recommendation to the capital, and to remain at Asu till an answer should be returned. It so happened that the Sultan was absent on a campaign to the far South, and the answer returned from his representative, after a delay of seven days, was that a messenger should be dispatched to the camp of the Sultan himself, and that Dr. Barth should be allowed to proceed to Bugoman, a large town about seven miles further up the river, and there wait for the Sultan's own decision and reply. The town of Bugoman was formerly the capital of an independent country, and its inhabitants still show so much of independence, that when Dr. Barth arrived with the instructions of the Sultan's representative, they were set at nought, and after having been kept waiting on the burning rocks of the naked banks of the river for an entire day, he was refused admission, and was forced to return to Loggene, there awaiting the return of the Sultan to his capital. The details of Dr. Barth's subsequent proceedings are not narrated in the communications before me. It appears, however, that when again marching towards the capital of Bagirmi, he was stopped at Bakada, a small place ten miles from Maseña, and was forced to wait for no less a time than seventeen days. He

Reached Maseña, the capital of Bagirmi after great difficulties.

reached the capital at last on the 28th of April, and though he seems to have been tolerably well received, he was not allowed to extend his journey beyond that place. For this restriction he endeavoured to make up by collecting all possible information respecting the regions to the south and also to the east as far as Dar For, including Waday. On the 6th of July, a messenger arrived from Kuka with long expected dispatches and letters from Europe, announcing, among other things, the pecuniary assistance granted by Lord Palmerston. In his happiness, on account of these news, Dr. Barth would have at once returned to Kuka, to arrange with his companion the course of their furthur proceedings, but was compelled by the Sultan of Bagirmi to remain upwards of another month, in order to witness a grand festival.

His return to Kuka.

At last, on the 10th of August, after staying upwards of three months at Maseña, Dr. Barth was at liberty to commence his return to Kuka. During his stay in Bagirmi he experienced the rainy season, which began in the early part of April and continued till October. On his return, the countries which he

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traversed, were the most beautiful appearance, while the rivers had considerably swollen, and greatly increased the difficulties of his journey. Even the smaller tributaries were found difficult to cross, and several times Dr. Barth was obliged to swim across the river with the bridle of his horse in hand. A portion of Loggene was inundated. From Karnak Loggene Dr. Barth reached Kuka in five days, and there joined his companion on the 20th of August.

Geographical results.

By this journey, our knowledge of the countries east and south-east from Lake Tsad, as far as the basin of the Nile, has been very considerably increased. Dr. Barth was the first European who visited the kingdom of Bagirmi. The whole of this country belongs to the basin of Lake Tsad by the river system of the Shary, its principal feeder. The Shary, or Asu, runs east of the river at Karnak Loggene, which was mistaken by Major Denham for the Shary, but which is only a tributary and is called Loggeme in Loggene, Serbenol at Wulia, and Ba Gun or Ba Bay beyond that district. The real Shary is the river crossed by Dr. Barth both at Mele and Asu. At the latter place it is 600 yards broad, has a current of about three English miles per hour, and is altogether a magnificent river, extending south-eastward to the basin of the Nile. In its middle course it is divided in two arms, enclosing an extensive island extending from Miltu to Mesken. At the latter place the two branches are re-united, the eastern branch, called Batshikam or Ba-ir, joining the main stream at nearly right angles. Maseña, the capital of Bagirmi, is situated about ten miles north of the Batshikam. The greater portion of Bagirmi is a vast plain, and only towards the eastern and south-eastern frontiers mountains appear. Mohammedanism has taken root in Bagirmi, but Dr. Barth speaks of it as still a "half-pagan" country. The route he travelled, however, as far as Maseña, is one of the principal and the southernmost of the great routes of the pilgrims from Central and Western Africa to Mekka; and from the many intelligent pilgrims he met at Maseña, he collected so much information respecting the country between it and the Nile, that he was enabled to lay down on the map with considerable completeness Waday and the adjoining regions. He has also written a voluminous account of the history, geography, and ethnology both of Bagirmi and Waday and the neighbouring pagan regions, which he dispatched to the British government before his departure to Timbuktu. In addition to this, he collected on his journey copious vocabularies of the languages of Loggene, Bagirmi and Waday, and less complete vocabularies, each containing about 200 words, of not less than eight other languages.

European merchandize.

It is worthy of mention that commerce and trade are developed in those regions to such an extent that not only the traders of Bornu and Waday, but also those of Kano visit Bagirmi, and Dr. Barth ascertained that European products go as far as Gogomi, situated in the mountainous regions occupying the south-eastern extremity of the country.

XI. DR. OVERWEG'S JOURNEY TOWARDS YAKOBA, 24TH MARCH TO 22ND MAY, 1852.

From Kuka to Gujeba.

While Dr. Barth proceeded on his journey to Bagirmi, Dr. Overweg went to explore the south-western provinces of Bornu, and to penetrate, if possible, into the Fellata dominions in the direction of Yakoba. The Vizier advised him not to cross their frontiers unless he could procure a Fellata escort.

On the 24th of March, Dr. Overweg left Kuka, his route being southwest. He traversed first an undulating sandy region with a few talhas and ghossubfields, not unlike some parts of Kanem, and well adapted for the rearing of camels. Near the Well Toggoi he met with a group of huts, the inhabitants of which were nearly all blind. Beyond this well, two large black ostriches, as well as gazelles and monkeys were seen. On the 28th of March he reached Magomeri, a considerable market place. The objects chiefly offered for sale in the market are dried fish, brought from the Komadugu (river) in the west, and cotton and onions from Uji in the east, in exchange for ghossub, which is cultivated very largely at Magomeri. The wells at this place are 40 feet deep and upwards. The huts of the inhabitants consist of straw, formed without much care or neatness. Further on is Gáfata, a very large place situated in a depression, only of recent origin, having been founded eight years ago. The inhabitants, among whom are a good number of Shuas, cultivate ghossub to a considerable extent and possess large herds of cattle. The roads through the ghossub fields are lined with green hedges, as in Musgo, but not in any other part of Bornu observed by the traveller.

Gujeba.

On the 1st of April, Dr. Overweg reached Gujeba, travelling along the deep bed of a river in red clayey soil. Gujeba is a large place, surrounded with low walls of red clay. The vegetation of the region round Gujeba is tolerably luxuriant; there are no less than 15 different plants cultivated, and 47 different kinds of trees were enumerated to him in their native names, 32 of them bearing eatable fruit, 3 eatable roots and leaves, and 12 neither eatable fruits nor roots; 40 different animals are met with by the hunters of Gujeba, including the civet, the musky secretion of which is collected. Gujeba belongs to Bornu only since 1847, when it was conquered by a combined army of the Sheikh and the Uelad Soliman. Dr. Overweg was kindly received at Gujeba, and a house adjoining the Sultan's was given him for his residence. When at home, he was constantly besieged by visitors, who conducted themselves with the greatest propriety. The playing of a small musical box he had with him, put every one in raptures, and there was an unceasing demand to hear the *moão*, as they called that instrument.

From Gujeba to Dora.

Dr. Overweg left Gujeba on the 9th of April, after a stay of five days. His route was nearly due west as far as Dora. Aboará is a village of wandering Fellatas, who move from place to place, where they find the best pastures for their cattle, which are of striking beauty and quality, and such large and powerful beasts, that they are said to be never attacked by the lion. The Fellatas were very friendly to Dr. Overweg, and sent fine milk as a present after him to Shemgo, a near town where he remained for the night. This place is strongly fortified with walls and a double line of ditches against the attacks of the Kerrekerri, who live to the west, and are so much feared in that neighbourhood, that Dr. Overweg had his fire-arms loaded, and everything put in fighting order. Between Shemgo and Dora he crossed three Wadis with traces of rivers, extending probably from south to north, through a tract with savannah-like vegetation, tall, dense grass, as well as fine trees. The soil continued of red clay. He arrived at Dora on the 9th of April.

Dora.

Dora is a large place governed by a Sultan. The old town of Dora, lying among the hills to the west, and the ruins of which were visited by Dr. Overweg, was destroyed in 1830 by the Fellatas, and the power of the Sultan has since all but vanished, "formerly he had 230 horses, at present not one, and of 70 wives only three had been left him." He is continually harassed by his neighbours, the Kerrekerri and the Fellatas. During his short stay, Dr. Overweg explored the hills to the westward, and when he applied to the Sultan for a guide, this amiable old man offered himself with twelve of his people for that service. These hills are quite flat at the top, and are broken by deep gorges and valleys, in which were seen ghossub fields and thickets of a kind of bamboo, with numerous asses feeding. From these hills, which consist of red sand-stone, a fine view was obtained, and bearings of many points were taken. Dr. Overweg was very kindly treated at Dora, whence he continued his journey in a southerly direction to Fika on the 13th of April. The camel which carried the baggage of the traveller, was sent by a circuitous easterly road, as the more direct one lay over hills and rocks impracticable for such animals. Oxen are the beasts of burden used in that region, and even the caravans from Manga (or Minyo) bringing salt and trona, consist of those animals instead of camels. Sogoma is situated in a fine broad valley, covered with ghossub and trees.

Fika.

After crossing a considerable range of hills, forming a spur of the table-land to the west, the large town of Fika was reached on the 14th of April. Fika is surrounded with a walled suburb, and the town itself has a very high wall with double ditches. It is indeed most strongly fortified, and boasts of never having been taken by an enemy, not even by the Fellatas. It lies at the opening of a valley, extending to the west into the mountains, and is abundantly supplied with date-trees and water. The inhabitants have a language of their own, said to be allied to the Ngnssum and Kerrekerri. The behaviour of the inhabitants to the travellers was by no means so amiable as in the places visited previously, though they were readily supplied with a house and plenty of provisions. On the morning after his arrival, Dr. Overweg induced some of the inhabitants to ascend with him the hill which overlooks the town. He there enjoyed an extensive view over the vast plain to the south, draining, it was said, into the Benueh, an assertion, however, which is in contradiction to other reports. The Fellata territory commences immediately to the south of Fika, the large town of Naffada, also Bake,—the former, only three hours distant, being plainly discernible to Dr. Overweg. He was about to ascend a higher hill farther west, when messengers from the Sultan arrived to command his immediate return to the town. At the gate, the comers were greeted by an immense assemblage of the people, by no means in a friendly manner: the Fika men who had conducted the stranger to the top of the hill, were unceremoniously taken hold of and led away, and doleful cries and lamentations were uttered by the multitude, sounding "La, la, ai, ai, ai, yal, yai!" Dr. Overweg pressed forward through the crowd, and reached his habitation without any violence being offered to him. It was afterwards explained to him, that this scene arose from his ascending the hill, which affords so complete a view over their town, that the inhabitants feared this knowledge obtained by a stranger could not but be productive of evil. And such was the excitement, that one person had proposed the stranger should at once be killed, in order to prevent the apprehended ill consequences. The Sultan assured Dr. Overweg that this manifestation was not justified by his own feelings; still it appeared advisable to leave the town next morning. Accordingly the plan of penetrating farther in that direction was abandoned, and the travellers returned northward towards Dora.

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Return from Fika to Shemgo.

Between Fika and Sogoma a troop of armed men were seen stealthily moving about, and then disappearing among the rocks. They were said to be robbers belonging to Ngussum. From Sogoma, Dr. Overweg turned north-east, avoiding Dora, and went to Shemgo on his former route. Many Fellatas from Boari, (WNW. from Shemgo,) with their fine herds of cattle, were met with, and the Fellata women with their unceasing cries "Kiam feleh!" went about the streets of Sogoma selling milk and butter.

From Shemgo to the country of the Baber.

From Shemgo, Dr. Overweg again directed his steps to the south, keeping on an elevated tract of country which forms the waterparting between west and east. He met with many Fellatas and their herds, which were estimated to comprise at least 1000 head of cattle. Between Shemgo and Mutuch there is gypsum and limestone, the latter containing many fossils. In this region were also many traces of elephants and an abundance of trees. Mutuch was reached on the 20th of April. It is a considerable place, surrounded with walls and ditches, and containing solidly built houses, with a population estimated at 2000. The strangers were kindly received, a whole bullock and many fowls were sent them as presents, together with plenty of *kimbil*, a muddy-looking beverage made of ghafuly, and possessing an intoxicating effect. The women are tall and thin, in consequence, as it was asserted, of their freely partaking of the *kimbil*. Here Dr. Overweg first met a man of Baber, a Pagan tribe south-east from Mutuch; their language was said to approach that of the Marghi, their neighbours on the east. To the south of Mutuch commences crystalline formation, and the vegetation becomes more and more luxuriant. The town of Gebbeh lies in a hollow, and is, like most of the towns in that region, fortified with walls and ditches. Tame ostriches were running about the streets. Dr. Overweg witnessed an elephant hunt, which are numerous to the south of the town; on this occasion a female elephant of a small size was killed.

Baber.

From Gebbeh, Dr. Overweg pursued his route in an easterly direction, and entered the mountainous territory of Baber at Billaraba. Close to this place, on the northern side, is a high steep rock, covered with trees to its summit, and on the southern side stretches away a mass of mountains, said to be densely inhabited by the Baber. The inhabitants of Billaraba belong to the same tribe, and appeared to our traveller an inoffensive, good-natured people, with handsome features. They pretend to be Mahommedans, while they say of their brethren in the mountains, that they were Pagans, and neither acknowledge the Sultan of Bornu, nor that of the Fellatas. They have three Sultans, who reside at Fadem, Kogher, and *Jira*. East of Billaraba are ranges of basaltic formation. At Liggedir, Dr. Overweg was treated, by way of entertainment, with the performance of the elephant dance, which commences by imitating that animal in its various habits in a clever manner, and concludes by representing the hunting and killing of the elephant. Buni lies on a rocky eminence, and is the northernmost place of the Baber; here the country changes from a mountainous and woody region to a more savannah-like flat country. A Wady with basaltic boulders was crossed, after which Mayimyim was reached, where on the 29th of April, Dr. Overweg experienced the heaviest rain which had as yet occurred in that season. The mountains of Baber appear very high from this place, with isolated prominent steep cones of a dark black colour, and supposed to be entirely basalt. On the 30th of April the traveller again reached Gujeba.

From Baber to Gujeba.

From Gujeba to the country of the Marghi.

After a few days' stay at that place, Dr. Overweg proceeded to Marghi, pushing his way for a third time southwards. East of Gujeba, many encampments of the Shuas were met with; also some wandering Fellatas. Passing successively the towns of Birniva, Umbel, Afe, and Uje, situated in a plain dotted with herds of cattle and a few giraffes, he reached the first village of the Marghi on the 9th of May, situated at the foot of low ranges of sandstone hills, stretching from NW. to SE., and about 400 to 500 feet elevated above the plain. As far as Koddokshan, the furthest place visited, the district is full of villages and groups of huts, and presents a country densely inhabited. Retracing his steps, Dr. Overweg came to Munneh, and then to Yaiyoa, the northernmost village of the Marghi in that direction. At Munneh his camel, quite worn out from the fatigues of the journey through the mountainous region, had to be killed. The Marghi seen by Dr. Overweg are mostly of a black colour, but many are brown. Some are tattooed, others not. The women are good-looking. The Marghi were said to be more courageous and warlike than the Baber, and to use highly poisonous arrows. They live in huts made of straw. The travellers were kindly treated among them.

Return to Kuka.

From Yaiyoa, Dr. Overweg passed through the district of the Uje, first explored by Dr. Barth, on his journey to Adamaua, his route being a little west from that of the latter, and arrived at Kuka on the 22nd of May.

The whole of that country, from Kuka to the hilly region commencing a little before Gujeba, upwards of 100 miles in extent, is an immense plain, consisting partly of sandy, and partly of clayey soil. Its vegetation approaches that of the Savannahs, covered as it is with grass, and scarcely any trees, except of a stunted growth; but the rainy season not having commenced when Dr. Overweg crossed and re-crossed that plain, the grass was mostly withered and burnt up, and the few trees and brushwood possessed no refreshing green. It is but thinly inhabited by the Kanori and Shuas, who cultivate the soil with ghossub. The trees consist mostly of talhas and mimosas. During the dry season, it is enlivened with gazelles and ostriches; but during the rainy season it swarms with elephants and lions. Towards the hills, where the vegetation becomes more luxuriant, the grass attains a great height, exceeding that of a man on horseback.

Geology of the hilly region south west of Lake Tsad.

The geology of the region explored by Dr. Overweg on this journey, is not without some interest. It presents plutonic and volcanic rocks, together with stratified formations of different descriptions, and containing various though no useful minerals. The hills of Dora and Fika, of Mayimyim and the country of the Marghi, consist of red sandstone. The former appear in a mass of an almost level tableland, with a few cones rising out of it. West of Dora, marl and variegated clays are found in portions of the argillaceous red and yellow sandstone, with many nodules of red and reddish-brown ironstone; large blocks with pisolitic clay iron ore, in most of them distinct impressions of reeds or rushes. The hills west of Fika showed the same red sandstone, very argillaceous, sometimes slaty, sometimes nodular, containing throughout nodules of iron and lumps of clay. The hills of Marghi, stretching from NW. to SE., in low ranges of 400 to 500 feet above the plain, are of the same composition; as are also the hills east of Mayimyim. At the latter place, the red sandstone is clayey, and contains small clayey nodules of iron. The adjoining plains consist of red soil, the iron-bearing rocks projecting from the surface. Numerous traces were observed of ironworks, and many slags. Close to Uje, and on the northern side of the Marghi hills, Dr. Overweg unexpectedly found quartz quarries, the first quarries he had seen in Central Africa. A couple of feet under the alluvial soil, the silicious rock is exposed in horizontal beds of 2 or 3 feet thick. On the sides they set fire to faggots of wood, then strike off blocks with axes. These blocks are afterwards wrought into the form of a millstone by blunt iron chisels and a piece of silicious stone as large as a man's head. The rock consists of portions of angular grains of quartz of greasy lustre, of the size of peas, the interval being filled with white decomposed felspar. The central group of hills, forming the stronghold of the Baber, consists of basaltic rocks. A spur of these hills extends northwards to Shemgo. Proceeding from that place to the south, Dr. Overweg first saw clay, then gypsum, in fibrous foliated cakes. At Mutuch no rock was visible in place; among the trees, and in the ghossub fields, were found blocks of yellow limestone from 1 to 2 feet in diameter; previously several of a bluish colour, a few of them reddened as if by fire. It is very compact limestone, quite full of fossils, small reptiles' teeth, indistinct shells, ammonites and belemnites. Near Gebbeh appeared isolated pieces of granular crystalline rock on black soil. South of Gebbeh on fields of ghossub were found blocks of limestone, each of which contained traces of ammonites; many ammonites weathered were out lying about, some six inches in diameter. There were also many traces of other fossils, but incomplete. Immediately to the east of Gebbeh, the surface consisted of sandstone, of a reddish and whitish colour, sometimes very coarse. Beyond this, the soil was in many places covered with black crystalline rocks, similar to that found between Mutuch and Gebbeh; also coarse-grained sandstone in large smooth slabs, the beds having their abrupt faces towards the south. At Billaraba appear steep

Red sandstone.

Iron works.

Quartz quarries.

Limestone.

1852.

black, very regular, sharply conical hills, consisting of basalt containing olivine. In a small depression between Billaraba and Liggedir the white limestone of Mutuch reappears on the surface; but the slopes consist of basaltic rock. On the eminence of Liggedir all is basalt; at its foot there are red granitic masses, also quartzose sandstone, and decomposed granite, quite white. About a mile west from the town, is a black conical hill, which Dr. Overweg ascended. It consists of basalt with transparent olivine; the blocks being all of them four or five-sided short pillars, none standing upright. The summit of this hill forms a flat surface about 100 feet in diameter; its basis throughout is sandstone, sometimes soft, sometimes silicious and hard, with numerous grains of white quartz on a reddish-brown ground. The surface around is partly white with many small quartz pebbles out of the sandstone. The silicious sandstone or conglomerate is found as far as Buni, the northern slopes being covered with blocks of basalt. The mountains of Baber are said to be all black, and they appeared so to Dr. Overweg from whatever side they were seen; he felt no doubt that they consist entirely of basalt.

Natural productions and inhabitants of that region.

The whole of the hilly region comprised within the preceding remarks seems to be a fine and fertile one. The rainy season begins fully a month earlier than at Kuka, the first showers having been experienced by Dr. Overweg on the 4th of April. The great variety of cultivated plants and trees has already been alluded to. Among the latter the *Kuka*, a tree of an immense size, is one of the most prominent. There are rich plains, valleys and wadis with fields and pastures, the latter being resorted to by the wandering Fellatas with their numerous herds of fine cattle. Oxen and asses are the beasts of burden. There are everywhere plenty of provisions, which may be had on reasonable terms, as will be seen, when it is mentioned that the price of a sheep given by Dr. Overweg at Sogoma was no more than the value of two pence. Of wild animals the chief are elephants, lions, a great number of monkeys of a black and red colour, ostriches, and serpents. Honey is in great abundance. Shemgo being distinguished for fine quality. The inhabitants consist of a great number of different Pagan tribes, and at least three distinct languages are spoken, of which Dr. Overweg collected vocabularies. The inhabitants of Gujeba are said to have belonged originally to the Ngussum, and to have spoken their language, but at present they only speak the Kanori. These various tribes acknowledge the Sultan of Bornu as their master, and pay him a tribute; but his supremacy in that region is at present still of a rather uncertain and equivocal character. The treatment Dr. Overweg received was throughout very favourable, except at Fika; everywhere he was abundantly supplied with provisions, as fowls and milk, sheep, and once a whole ox. For all this kindness these poor children of nature considered themselves fully recompensed by hearing the wonderful *molo*, the small musical box of their wonderful guest, which to listen to throughout the night the audience at times declared would be preferred to going to sleep. The north-western part of the district is greatly disturbed by the Kerrekerri, a neighbouring tribe, who have no large towns, and seem to subsist chiefly on plunder. Another neighbouring tribe are the celebrated Nyemyem, who have long occupied a prominent part in the history of Inner Africa. From three distinct reports which Dr. Overweg received, at Gujeba, Fika, and Buni, it appears that those people, who are said to be cannibals, inhabit the districts adjoining the territory of the Baber on the south.

DEATH OF DR. OVERWEG.

Dr. Overweg's state of health in relation to the enterprise, and his self-devotion.

In the preceding pages the writer has already expressed his belief that Dr. Overweg was not sufficiently strong for the gigantic undertaking in which his love for scientific research had prompted him to embark. It is true he remained free from the attacks of the most prevalent of all the diseases in those countries, the fever, for a longer period than either of his companions, and that from all his communications sent to Europe, it could only be inferred that he had uninterruptedly enjoyed the best of health; but other evidences tell a different tale. Already in the northern portion of the desert, shortly after leaving Ghat, Mr. Richardson, in his published journals, tells us, under date the 1st of August, 1850, that Dr. Overweg began to show signs of weakness. No such complaint emanated from himself directly, not even in the journal he kept. He had embarked in the enterprise with a quiet and unassuming devotion, zeal, and determination, that, rather than give up his object and return at an early opportunity to Europe, he would continue his endeavours as long as a spark of life remained in him. With such feelings it can be understood that he never spoke of any debility or weakness on his part, and that probably he did not even own it to himself, till on his last journey. It was then that he frequently alluded to "sleepless nights", owing to the fatigues of the journey and the pains from riding on horseback through the mountainous regions. And on the 22nd of May, 1852, the day after his arrival at Kuka from Gujeba, the following entry occurs in his journal: "Since nine months (during the journeys to Kanem, Musgo, and Gujeba) I have been almost daily on horseback; and, unaccustomed as I am to continued riding, this has had such an effect on me at the last, that I was seriously suffering on my arrival at this place." He seems to have, indeed, been completely worn out from the continued exertions of those successive journeys, with no sufficient rest between, and though he afterwards mentions that a 20 days' rest and the taking of medicine had refreshed and strengthened him, still they must have given the death-blow to his constitution, which became too impaired to withstand the subsequent attack of fever causing his early death. No doubt every traveller has to go through fatigues, exertions, and difficulties, but that quiet determination to sacrifice his life if need be, without so much as to parade or express such feelings to either relatives or friends, is a deed which deserves the warmest acknowledgments.

His death brought on by over-exertion.

Not long after Dr. Overweg's return to Kuka the rains commenced, the first showers occurring on the 15th of June. He now began anxiously to expect Dr. Barth's return from Bagirmi, as further operations depended upon a mutual arrangement. The 24th of June was a joyful day, the great caravan arriving from the north and bringing letters and supplies so long expected. The dispatches from the British government addressed to Dr. Barth were at once forwarded to Bagirmi by a special messenger, but it was not till the 20th of August that that traveller was able to return to Kuka. During this protracted delay Dr. Overweg had so far regained his strength as to make short excursions to the lake and in other directions. Dr. Barth when arriving at Kuka, noticed the change in his friend's appearance who looked emaciated and had no appetite. To avoid the dangers of the rainy season, to which he had already too long been exposed, it was arranged that he should set out from Kuka on a somewhat more extensive excursion. Accordingly he went in a north-west direction to the Komadugu or River of Bornu, commonly called Yeou, Yo, or Yeo, though quite unknown by that name to the natives themselves. He spent nearly three weeks in tracing the river between the towns of Yo and Dutshi and exploring the surrounding country. By this journey it is once more, and most decidedly, confirmed, that that river runs into Lake Tsad from west to east, and not out of it, from east to west. In that season the river had begun to become a running stream on the 21st of July. It continues a running stream for seven months at an average, *i. e.*, to the end of February. In November the river begins to overflow its banks, which are wooded and covered with luxuriant vegetation, and densely inhabited by Kanembus. The wild animals consist of hippopotami, lions, giraffes, wild oxen, wild boars, monkeys, and various birds; elephants are said to be absent.

His last excursion.

Dr. Overweg's health was satisfactory throughout this trip, and he returned to Kuka on the 14th of September, in the hope of having regained his health. Five days afterwards, however, he was attacked by fever, and after seven more days he was no more. It was on the 20th of September that he felt seriously ill. At his own wish, he was removed to Maduari,—which is ten miles east of Kuka, and near Lake Tsad. This is a very open and pleasant place, interspersed with trees, and had always been a favourite spot with the deceased. The boat in which he had navigated Lake Tsad was also there. It was not till the 24th that he was enabled, with the assistance of three persons, to reach that place. There was, however, no help. The most dangerous symptoms manifested themselves on his arrival, his speech becoming gradually unintelligible, and, after much suffering, he expired on the 27th of September, 1852, at four o'clock in the morning. In the afternoon Dr. Barth fulfilled the heart-rending duty of interring his only companion and friend.

His death, Sept. 27, 1852.

Thus, at the early age of thirty, and sharing the fate of Mr. Richardson, fell the second victim out of three persons composing this enterprise. Dr. Adolf Overweg was a native of Hamburgh, where he was born on the 24th of July, 1822. He was by profession a geologist, and had received his education at the universities of Bonn and Berlin,—in the latter of which places he had taken his degree. His labours had already secured him good prospects for his lifetime, when the same feeling of self-devotion to the cause of geographical discovery that had animated others of his countrymen, as Hornemann, Burckhardt, Leichardt, to offer themselves as volunteers in the English service,—prompted him to accompany Mr. Richardson, as naturalist, to Central Africa. His kind and cheerful deportment and his amiable disposition made him beloved by all who were personally acquainted with him. The inhabitants of Kuka and the surrounding regions, among whom he had resided for a considerable period, and made himself an universal favourite, showed much grief on the occasion of his death. His grave is near the shores of Lake Tsad, which he was the first European to navigate.

1852.

XII. DR. BARTH'S PROCEEDINGS SINCE AUGUST 1852.

Proposed operations.

After receiving the cheering and encouraging letters from Europe during his stay at Maseña, Dr. Barth's preliminary plan of future operations was the following. First, once more a joint attempt should be made by him and his companion to penetrate into the countries east of Lake Tsad, as far as Wadai and Dar'For; secondly, a journey westwards as far as Timbuktu; from Timbuktu back to Adamaua, and thence another attempt to solve that most important problem, to cross the African continent and reach the Indian Ocean. Till then the two travellers had been greatly embarrassed and limited in the extent of their proceedings by the want of adequate means, which though liberally granted had not reached them. Now, when these supplies came, their enthusiasm was doubled, and their determination greatly strengthened. Dr. Barth, full of high spirits, hastened on to Kuka, to join his companion for jointly pursuing their objects in a still more energetic manner than before. It was, alas! otherwise ordained,—for he came just in time to lay his sole companion in the grave. But his own health being unimpaired,—however great the loss of his only companion,—he determined, with true heroism, to continue the researches alone, expressing at the same time the hope to receive the reinforcement of another companion. He made at once arrangements to start on the contemplated journey to the west, as more important than the eastern route, and to explore the vast unknown regions between Sakatu and Timbuktu, and the countries on both sides of that part of the Kowara, which are as yet entirely unknown to Europeans. Previously to setting out on that bold mission, and being by no means insensible to the dangers he would expose himself to, he had taken the noble precaution to send all his journals and papers to Tripoli, there to be deposited with the English Consul, in order that they might not be lost, should he perish himself.

Determination of a journey to Sakatu and Timbuktu.

His departure from Kuka, 25 Nov. 1852.

The arrangement and completion of these papers caused a little delay, but on the 25th of November 1852, he was able to leave Kuka. The urgent wish of the Sultan was, that Dr. Barth should remain in Bornu as British Consul; and when the latter explained to him that this for several reasons was out of the question, he begged him to urge the sending of another suitable person to his country, in order to keep up friendly and commercial relations with England. On parting, the Sultan of Bornu presented Dr. Barth with two fine camels. Very little is known of the proceedings of Dr. Barth since his leaving Kuka, beyond that of his having reached Kashna, and thus performed more than one-third of his journey to Timbuktu. His last letters are dated Kashna, 6th March 1853. He had been well received by the Fellatas, and secured the special protection of the *galadima* (or Prime-Minister) of Sakatu, who had promised to have him safely escorted to that place by 200 horsemen. During his stay at Kashna he had made up and forwarded to Tripoli the last portion of his Journal, and had purchased large stores of Kano and Nufi merchandise, intended as presents to the numerous chiefs and persons of influence whom he expected to meet on his journey. He was, however, much disappointed in not having received the greater part of the supplies dispatched to him about twelve months previously, and which had been an almost incredible time on the road. His health and spirits were in the best condition, and a particular source of gratification and encouragement to him was the unexceptional attachment and faithfulness of his servants. A report has come home indirectly, namely through Dr. Vogel, to the effect that Dr. Barth had safely reached Sakatu.

His arrival at Kashna.

Dr. Barth's plan of his further journeys.

After having accomplished his object in the west, namely, the exploration of the countries situated on both sides of the Kowara as far as Timbuktu, it is Dr. Barth's intention to return to Sakatu, and thence proceed in a south-easterly direction to Yakoba, and to the Chadda-Benuch, in order to trace it from the point to where it was ascended by Allen and Oldfield in 1833, and the point where he crossed it in Adamaua, and to explore the countries situated on its banks. Among these is particularly Korórrofa, the accounts of which have produced in Dr. Barth the greatest anxiety to visit it. According to the position in his map, it lies south of Yakoba and Darróro, (Lander's Dunrora), occupying the middle course of the River Benuch, and bordering to the east on Adamaua, to the west on Doma. It is a great country, densely inhabited by a people who have long been distinguished for their superior civilization and industrious skilfulness. Shortly before his departure from Kuka, Dr. Barth received special information of great interest respecting that country. "Korórrofa", he says, "is identical with the once celebrated country of Wángara. The inhabitants are clothed. Wukári, the capital, is an immense town, and does not (as shown in his map) lie close to the river Benuch, but eight or nine English miles south from it. Korórrofa comprises the following distinct states: Agany, Yimmolo, Bashikkári, Yemmáli, Bahawelino, Kewe, Indaw, Binderi, Yanfeni, and others." This interesting and important country occupied a conspicuous place in many of the old maps of Africa, but is wholly expunged in almost all modern maps. It is scarcely alluded to by any of the more recent African travellers in that quarter, and, what is most strange, seems to have remained entirely unknown to the various explorers and surveyors of the Kowara and Chadda. The only notice alluding to it is that contained in the geographical memoir of Sultan Mohammed Bello of Sakatu, given to Captain Clapperton in 1824, in which Korórrofa, called Kornorfa, is enumerated as one of the numerous provinces composing the country of Bowsher, (Bolobolo, Bolewa or Bautshi of Barth), and thus described: "Kornorfa embraces about twenty divisions, ruled by one king, who often sallied forth upon Kanou and Barnou, and caused much desolation. A gold mine is found in it, as likewise one of salt, and another of antimony. Near to this province there is an anchorage or harbour for the ships of the Christians, who are sent by two sovereigns to traffic or trade with the people of Sudan."*

The kingdom of Korórrofa.

Importance of the exploration of Adamaua and Korórrofa.

Whether it be, as is sincerely hoped, the good fortune of Dr. Barth to explore himself those interesting regions situated on the river he discovered, or not, it is hoped that this object will be attained by the steam-boat expedition up the Chadda, now on the eve of leaving England. The further exploration of Adamaua and Korórrofa is in itself a most important undertaking. If, as is believed, an easy access can be established to those countries by means of the supposed navigableness of the Chadda-Benuch, it admits scarcely of any doubt, that such a result would form a new era in African discovery and regeneration. For, in the opinion of Dr. Barth, Adamaua must henceforth form the basis, from that direction, of any attempts to penetrate farther into the vast unknown interior of Africa, or to cross the continent towards the Indian Ocean. Thrice he has pioneered in this direction; first, to Adamaua, secondly to Musgo, and thirdly to Bagirmi. Respecting the latter, even Dr. Barth, who can scarcely be surpassed in courage and energy, says, that "without the Sultan of Bagirmi sending him a written guarantee of protection in his dominions, he himself would not again venture into that country." As to the middle route, by Musgo, he does not specially comment upon it, but expresses his decided opinion, that the route from Adamaua to the Indian Ocean seemed to him the most practicable. With the permission of the Great Sultan of the Fellatas at Sakatu, (for which he chiefly undertook the journey to that capital), to explore and pass through Adamaua, he thinks he would have surmounted the chief difficulty. Another great difficulty is the passage through the border territories of the Pagans, who are exposed to the slave-hunting expeditions of their Mahommedan neighbours, and who naturally consider those coming from the countries of the latter as their bitterest enemies. In the case of Dr. Barth, according to the opinion of that traveller himself, it is confidently believed, that so well are the objects for which he has now so long resided in the country known throughout Northern and Central Africa, that his peaceful journeys would be readily distinguished from the Mahommedan razzias. As early as August 1851, he writes, that even from the little experience gained at that time as to the treatment he had received among Pagan tribes, he would never hesitate to trust himself among them. This assumption was entirely confirmed in the course of subsequent experience, and it will be seen from the preceding notes, that both Dr. Overweg and Dr. Barth were treated with the greatest kindness and hospitality by all Pagan tribes they had visited, as the people of Guber and Mariádi, the Biddumas, the Marghi, the Baber, and others. Dr. Overweg mentions pointedly that *Christian* missionaries, traders, and *malems*, would be most welcome among the pagans of Guber and Mariadi, and he adds, that the English are well known and particularly esteemed. Under *malems*, the learned, are comprised every person who can read and write.

The chances of crossing the African continent from Sudan to the Indian Ocean.

* See Denham and Clapperton's Travels, Appendix, pp. 102 and 103.

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The lack of means, indeed, has hitherto proved the chief obstacle to Dr. Barth in undertaking the great journey to the Indian Ocean. Of servants permanently attached to him his means only allowed him to maintain two Fezzaneers, "honest fellows, but quite insufficient for any great undertaking." The servants of his unfortunate companion, Dr. Overweg, he subsequently retained in the service of the expedition, and his whole force then consisted of: "five servants, four camels, four horses, and plenty of arms and gunpowder"—and with these means he hesitated not a moment to undertake his journey to Timbuktu. Should Barth have the good fortune either to meet with the Chadda expedition or unite with Dr. Vogel, the hope may then be reasonably entertained, that, if ever the continent of Africa is to be crossed from Sudan to the Indian Ocean, it will be by him.

XIII. DR. VOGEL'S JOURNEY; DEPARTURE FROM ENGLAND IN FEBRUARY 1853.

Ever since the death of Mr. Richardson, the two remaining travellers had expressed the wish, that one or two companions might join them, to increase their force. As it was, they pursued their object with great zeal and energy, and accomplished six distinct journeys since Mr. Richardson's decease. At that juncture, (summer of 1852), they received the long expected supplies, and then announced that they would henceforth concentrate their united energies towards the attainment of the great object of their undertaking, the journey across the African continent. For only two persons, this gigantic plan was, indeed, a most perilous one:—should one of the two die, it would paralyse the energies of the other. Under these circumstances, the reinforcement of a third traveller was suggested.

Reasons for the dispatch of Dr. Vogel.

It was also deemed advisable to replenish the instruments of the expedition, these having not been very complete originally, and having greatly suffered either by injury, failure, or loss, during three years' operations and mischances. Further, it appeared very important and useful, that the reinforcement should consist of a professional astronomer. A most suitable person presented himself in Dr. Edward Vogel, assistant to Mr. J. R. Hind, at Mr. Bishop's Observatory, who volunteered for the service with enthusiasm. By profession an astronomer, Dr. Vogel is, in addition, a good botanist, and having been strongly recommended by Admiral Smyth, Colonel Sabine, Sir William Jackson Hooker, Mr. Robert Brown, and others, the Chevalier Bunsen, in the latter end of January 1853, made a representation to Lord John Russell, then at the head of H.M. Foreign Office, who at once considerately granted the request, and kindly offered to have Dr. Vogel accompanied by two chosen volunteers out of the corps of Sappers and Miners.

His departure from England, Feb. 20, 1853.

On the 20th of February 1853, Dr. Vogel and his two companions left Southampton *en route* for Malta, by the Peninsular and Oriental Steam Packet, fully equipped for astronomical, magnetical, and botanical researches. And well it was that this additional force was under way, for, by a singular coincidence, on the same day, letters from Dr. Barth were received in London, in which he announced the death of his only companion and friend, Dr. Overweg! Dr. Vogel reached Tripoli in March. Owing to various circumstances, the departure of the travellers from that place was considerably delayed. But the time was usefully employed in preparatory exercise and training of himself and his companions, the Sappers and Miners, whom he instructed in making observations of every kind, which under cases of emergency hereafter cannot fail to be of great practical use and importance.

From Tripoli to Murzuk, 28 June to 5 Aug. 1853.

The travellers started, at length, on the 28th of June 1853, accompanied by two persons who, it was hoped, would render them important service: one was Mr. Frederick Warrington, son of the late British Consul at Tripoli, who was to accompany them as far as Murzuk, and who is well known and respected by the various tribes of the Desert. The other was a relative of the Sultan of Bornu, who was on his way back to Kuka from his third pilgrimage to Mekka, and under whose protection the travellers were to reach Lake Tsad. The route chosen is the usual one by Beniolid and Sukna, east from that selected by Messrs. Richardson, Barth, and Overweg, and the same by which Ritchie and Lyon, Oudney, Denham, and Clapperton went. This most difficult portion of the journey from Tripoli to Lake Tsad was successfully accomplished, and Murzuk was reached on the 5th of August 1853. It was probably for the first time that Europeans ever traversed that region in the middle of summer. The heat was most oppressive, the thermometer ranging between 92° and 100° in the shade, and reaching 120° in the sun. The supply of water was very scarce, and always bad. "During fifteen days", Dr. Vogel writes, "we met with only three wells, and what it is to drink the water, which was kept for five days in skin-bags, only those can justly estimate who have actually tasted it." However, under the excellent management of Mr. Warrington, the little caravan arrived at Murzuk in very good order, with the instruments and effects in the best condition. The photographic apparatus alone could not withstand the great heat, it was rendered entirely useless, and was therefore sent back to Tripoli.

Great heat, and scarcity of water.

General geographical features of the region between Tripoli and Murzuk.

Immediately on leaving the gardens of Tripoli the Desert commences. The upper portion of the Taghona (or Tarhona) Mountains is without vegetation and water, and strewn with many large stones. But its southern slope, near the Mulgher (or Mulghra) pass, has running water and is here and there overgrown with grass. This region contains numerous Roman ruins. The highest of the Taghona Mountains seen by Dr. Vogel is 1529 feet above the level of the sea.

Beniolid.

The valley of Beniolid extends from west to east for about twelve geographical miles, making a small bend about four miles from its eastern end. Both slopes of this valley are covered with villages, and basalt occurs on the southern slope. The bottom of the valley is 300 feet lower than Beniolid, is covered with forests of palms and olive-trees, and contains 27 wells. The inhabitants are Arabs of the tribe Urfullo, numbering about 5000 souls, and are particularly rich in camels, of which they possess about 12,000 head. The point determined astronomically by Dr. Vogel is the village of Dahúr Sebád, situated on the southern slope and at the eastern end of the valley, about four miles east from the castle of Beniolid.

Wady Sofejin.

From Beniolid the road descended a valley, the direction of which is from north to south; on the second day, 30 miles distant from Beniolid, Wady Sofejin was reached at a point where a flat-topped mount, Yella Si Amsellám, 400 feet high, nearly closes up the latter. This valley extends from south-west to north-east, in a width of eight miles, limited in the north by low sandhills, and in the south by a range of limestone hills, which separate it from Wady Zemzem, and contain the well of Enfid. Wady Sofejin commences at Zintan near the road from Tripoli to Guadamis, and terminates in the Gulf of Sidra between Mesurata and Isa. It forms the most fertile tract of the regency of Tripoli, its upper portion being particularly rich in figs, its middle portion in barley and wheat, and its lower portion, near the sea, in forests of date-trees. According to these features the Arabs call these different parts *Tin* (fig), *Bazeen* (cake or pudding), and *Washeen* (paste made of dates). In the rainy season Wady Sofejin is almost entirely inundated.

The well of Enfad is surrounded with Roman ruins, the range of hills in which it lies, being about two miles broad. Beyond this range is Wady Zemzem, which runs parallel with Wady Sofejin, and is about 35 miles wide. A slightly elevated tract, about 50 feet high, divides it from Wady Beij, extending likewise from south-west to north-east. Five miles east and west from the point where the road crosses this slight elevation between Wady Zemzem and Wady Beij, are wells of brackish water, which are also called Zemzem. Except these and Enfad there are no wells or inhabited places between Beniolid and Bonjem.

Bonjem.

Bonjem is a small place with 120 inhabitants, a few small gardens, and a castle, the whole being partly filled up with sand. It belongs to the regency of Fezzan, and is only 204 feet above the sea. Since 1843 the inhabitants are free of taxes, Muhammed Pasha wishing to increase the strength of the place, chiefly as a military station against the bands of robbers in the neighbourhood, who have their stronghold and chief retreat in an ancient castle situated a little east of Bonjem. The water of the numerous wells is strongly purgative. This place is also celebrated as forming the southern limit, in this part of the world, of that interesting little animal, the flea, replaced here by immense numbers of flies. During the march the latter congregated on and about the camels, and during the night they filled the tents of the travellers. Most of them died before reaching Sukna, which is tolerably well supplied with house-flies. But, strange to say, not a single specimen accompanied the caravan from that place, as if they knew that a journey over the Black Mountains, and the Desert by which they are succeeded, was too much for their slender powers. Twelve miles south-south-east from Bonjem is that remarkable hill, 70 feet high and consisting of limestone, called the Bazeen. Further on is a similar hill called Khayma, resembling a tent, and 120 feet high. South of Khormut el Mhálleh, *i. e.*, "opening for the many", or Wady Hunáych, a stony desert again appears, limited in the east by a range of hills, running parallel with the road, and about 15 miles distant from it. About 20 miles north of Sukna a range of hills is crossed extending in a direction of north-north-west to south-south-east, beyond which, in a small lateral valley, is found a well, Tmád el Tar (every place is called Tmád which yields water after taking away the sand), the first water after leaving Bonjem.

1853.

Sukna.

Sukna is situated in a hollow, 1036 feet above the level of the sea, and entirely surrounded by hills. To the east there are the Black Mountains, forming a perfectly level tableland, and assuming striking effects, from the blue colour of its rocks, the appearance of a sea horizon. The town is well built, and its inhabitants, numbering about 2500 souls, are in prosperous circumstances. The gardens are abundantly supplied with dates and various kinds of fruits. The supply of water is mostly derived from 40 wells. They are all hot wells, their average temperature is 88½°. Near Sukna are three pretty considerable places,—El Xer, seven miles east, Hoon, four miles north-east, and Wadan, 20 miles east. The latter is situated in the mountains.

The Black Mountains.

Ascending a small lateral valley of the Black Mountains, Godfah is next reached, a well with very good water and 1640 feet above the level of the sea. Fifteen miles south of this well is the highest point of the Pass, 2065 feet above the sea, the surrounding mountains being 2160 feet. The Black Mountains consist of yellow sandstone impregnated with iron, from which its crust receives a black colour, appearing in the sun's rays a deep blue. Large round patches of a yellow or brown colour are often seen on these black rocks, which give to the whole a most remarkable appearance. The summits are low and flat, and the valleys mostly circular or oval-shaped hollows. Animal and vegetable life is entirely absent in this region, which vividly suggests to the mind a landscape by moonlight. The whole range is 25 miles broad.

Desert of Ben Afeen and Tableland of Murzuk.

Beyond it and as far as Om el Abeed extends the Desert of Ben Afeen (Serir ben Afeen), quite level, with an average elevation of 1370 feet, without animals, without plants, and without water. This Desert was passed during the nights, during the day the heat on the surface being so great as to burn the soles of the camels' feet. Fourteen miles north of Om el Abeed (mother of slaves) are hills of drifting sand, called Gerenfad, and seven miles further south are rocks of sandstone, called Kenir. At Sukna are found the first salt lagoons, but beyond the Black Mountains, and as far as Murzuk, the surface is everywhere covered with a crust of salt. There is no inhabited place at Om el Abeed, but numerous wells of fresh water, 15 feet below the surface. After Om el Abeed came Zirrhen or Zeghen; then Sebha, 1380 feet above the level of the sea, formerly a considerable place and residence of Abd el Gelil, now in ruins and with scarcely 400 inhabitants,—the remains of 4000. Between Sebha and Rhodoa is a desert of fine sand, having midway a 60 feet deep well without water, called Sidir Muscrúd Lamin. Twelve miles south of Sebha four mountains are seen on the western horizon, which close up the Wady Shergi,—three of them being flat-topped, and one of a conical form resembling a pyramid.

Murzuk is situated, according to Dr. Vogel's observations, in 25° 55′ 16″ north latitude and 14° 10′ 15″ east longitude.

Botanical features of the route from Tripoli to Murzuk.

The vegetation between Tripoli and Murzuk was mostly dried up when Dr. Vogel traversed that region. Even in the fine Wadis north of the 30th parallel the plants were withered, and only a *ruta* and a *vincedoxicum* were met with in a fresh condition. High bunches of withered grass, and fields covered with *artemisias* and *thymus* gave evidence of the flora flourishing three months earlier. In the Tarhona Mountains occur enormous quantities of *tulipa sylvestris*. Advancing southwards, the country became more and more barren, until at last in Fezzan every vestige of wild plants disappeared, save a shrubby *tamarix* and a spinose *papilionacea*, called agúl by the Arabs, and used as fodder for the camels. For days in succession the eye perceives no other plants than date-palms, under which the drifting sand of the desert, the bane of vegetation, had accumulated to a considerable height, as if attempting to bury even these trees beneath its deadly mantle.

The cultivated plants of Fezzan.

In the gardens of the neighbourhood of Murzuk the inhabitants cultivate with great labour several kinds of grain and culinary vegetables. During the winter barley and wheat are grown, during the summer ghossub and ghafuly. The ghafuly mozri, so often mentioned by African travellers, is the Indian corn *(Zea Maïs)*, the spikes of which are gathered before they are quite ripe, and in this state they are toasted and eaten. So small is the agricultural produce in this part of the world, that the inhabitants cover each spike of the ghossub and ghafuly abiad with a neatly-made basket, in order to prevent the wild pigeons from picking the seeds. Amongst the few trees growing near Murzuk the finest is a *Cornus*, called kurno by the Arabs; it attains a height of 80 feet and a thickness of about three feet in diameter. Its chief native land is Sudan, and the latitude of 26° north appears to be its northernmost limit. The gum acacia enlivens and adorns the most stony sides of the valleys of the Wady Shergi and Gharbi. The gum of the trees near the roads is collected by the caravans and used as food. This article is brought in considerable quantity by the Tuaricks from the regions between Wady Gharbi and Ghat. The senna plant, the chief native country of which is Air, was found by Dr. Vogel in a spot near Djerma in Wady Gharbi.

The kurno and gum acacia.

The harmel & coloquinth.

In the *materia medica* of the Arabs, *Peganum Harmala*, vernacularly termed Harmel, occupies a prominent place. It is used as a preventative against ophthalmia. For that purpose a dozen of its seed-vessels are swallowed by the natives in the spring, fancying that in so doing they will be exempt from all diseases of the eyes. The plant ranges from the coasts of Tripoli to Fezzan, and is very common. Another common plant is a species of *cucurbitacea*, known by the name of coloquinth, the fruits of which are eaten by the ostriches. This *cucurbitacea* occurs in great abundance in the valleys of the Black Mountains, and forms a troublesome weed in the more fertile Wadis of Fezzan. The Tibbus are very fond of the seeds; they roast them in the manner those of the pumpkin are occasionally done on the continent, after they have been previously soaked for twelve hours in water to deprive them of their bitter taste. The fruit itself is used against urinal complaints, and diseases of the sexual organs. The only ornamental flower in the small gardens of Fezzan is the sun-flower (*Helianthus annuus*), which grows to the height of eight to nine feet. There is a useful plant met with by Dr. Vogel, which resembles in foliage the thorn. The bark of its root is used by the natives for tanning leather and dying it red; the charcoal of this shrub is used in manufacturing gunpowder. At Beniolid, in particular, the Arabs possess a great many secret powder-mills, in which an inferior kind of gunpowder, for about two shillings a pound, is manufactured.

The date-palm.

The date-palm is the most important of the cultivated plants of Fezzan. Of this tree Dr. Vogel has given a complete history, of which only the following notes are extracted. All that country and half of Tripolitania live upon that product. The huts of the poorer classes are entirely made of date-palm leaves, and the more substantial habitations consist chiefly of the same material; every door, every post, is made of date-palm wood, and the ceilings of the rooms are formed by its stems. The branches of the tree furnish the most common fuel. It is often brought from a distance of six to eight miles, a man's load consisting of two bundles, fetching about two pence. The fruit of the tree forms the food of both man and beast; camels, horses, dogs, all eat dates. Even the stones of this fruit are softened in water, and given to the cattle; for in many districts the cattle have no grass or any other herbage, except a little safehah (*melilotus*), which in Murzuk is cultivated with almost as much care as the corn, and fetches the high price of about four pence a bundle, which is not more than a good handful. The camels of Murzuk are therefore often sent about 100 miles to the north to have sufficient pasture. The number of the date-palms cultivated is enormous. When Abdel Gelil besieged Suckna in 1829, he cut down no less than 43,000 trees, in order to compel the town to surrender; nevertheless there are still 70,000 left. Their produce is comparatively small, 100 full-grown trees yielding about 40 hundred weight of dates, worth at Murzuk about 30 shillings, but at Tripoli about four times that sum. The dates, after having been gathered, are dried in the sun, and when quite hard, buried in the sand. They may thus be preserved about two years, but generally after the first 18 months they are attacked by the worms, and in the beginning of the third year nothing is left of them but the stones. As an everyday food dates are considered very heating, in consequence they are not much used on the journey, as causing great thirst. The most relishing and wholesome way to eat them is when made into a paste, mixed with barley. When the heart of the leaves has been cut out, a sweet thickish fluid collects at that cavity, called lagbi, which is very refreshing and slightly purgative. A few hours afterwards this fluid begins to ferment, becomes acid, and very intoxicating. From the ripe fruit a kind of treacle is prepared, used especially for coating leather bags or pipes to render them tight.

The geographical ranges of fruit-trees, etc.

In Tripoli there are lemons, oranges, pistachios, pomegranates, apricots, almonds, olives, opuncias, and grapes, in great abundance. At Insalata, a good sort of wine is prepared. Apples and pears are also plentiful, but of a poor flavour, and the best varieties of pears degenerate in a very few years in that region. Of cherry-trees, only three exist at Tripoli, from one of which six cherries were gathered by

1853.

Dr. Vogel. Melons and water melons are in great perfection, the latter attaining the weight of 150 lbs. They grow well on the sandy hills of the Desert, requiring no artificial irrigation. Potatoes also succeed at Tripoli, the tubers being very large, and having a fine flavour. Chesnuts there are none. Of the above mentioned fruits the following extend as far south as Murzuk: viz., pomegranates, figs, peaches, almonds, and grapes. The latter succeed particularly well on the banks of the Trona lakes of Fezzan. A few apple-trees are found in Wady Shiati, but their fruit is unfit for use. Oranges, lemons, pistachios, and St. John's bread do not extend to the south of the Gharian range. The olive-tree ceases at Beniolid, as well as the *Opuntia vulgaris*. A group of about 50 olive-trees is found near the village of Abiad in Wady Shergi, but they bear no fruit. The mulberry-tree extends to Sukna, and the apricot to Sebha. The cotton-plant attains its extreme northern limit at Bonjem, where it is found in the gardens; the soil, however, does not admit of its being extensively cultivated.

Importance of Dr. Vogel's astronomical observations.

The most important of Dr. Vogel's labours are his astronomical, hypsometrical, and magnetical observations, which he himself reduced at Murzuk, and sent home in a tabulated form, all previous travellers having failed in fixing accurately the position of any point beyond Beniolid. This will best be seen by comparing his position of the two chief points of the route with those of his predecessors.*

		Lyon and Ritchie	Oudney, Denham, and Clapperton.	Vogel.
Sukna	North latitude	29° 5′ 36″	29° 4′ 0″	29° 4′ 4″
	East longitude	16 41 0	15 28 0	16 18 30
Murzuk	North latitude	25 53 0	25 52 0	25 55 16
	East longitude	15 50 0	14 13 0	14 10 15

Stay at Murzuk, and excursions from that place.

Dr. Vogel and his companions were detained at Murzuk for upwards of two months, viz., from the 5th of August to the 13th of October, on account of Hadje Aksen, the Bornuese prince, under whose protection they were to travel to Lake Tsad, and who stayed at Murzuk in order to witness the great Bairam festival. The road between that place and Kuka being reported very unsafe for small parties, owing to the disturbed state of the country, the travellers preferred waiting for the Hadje to travelling without him. The time at Murzuk was not lost, however, and in addition to surveying the surrounding country, reducing the astronomical and other observations, and preparing his reports, Dr. Vogel made several excursions, as to Sesan and Zuela, and particularly to Wady Gharbi and Shergi and the Trona Lakes.

The Trona Lakes of Fezzan.

The Trona Lakes are situated in a desert of the most dreary and impracticable description, presenting a labyrinth of hills, undulations, valleys, precipices, and literally not one square yard of level ground,—formed entirely of drifting sand, in which the camels sink up to their bellies. For carrying a tent and cooking apparatus, together with two water-pipes,—in all about 350 lbs. weight, no less than five camels were required, and nevertheless only 9½ miles could be accomplished in 18 hours. One of these sandhills, measured trigonometrically—for the transport of the barometer was found impossible—was ascertained to be 530 feet above the adjoining lake. The whole of these lakes are situated along the northern side of Wady Shergi and Wady Gharbi. In the eastern portion of the former, Dr. Vogel found the remains of ancient towers built by the original inhabitants of Fezzan, and in Wady Gharbi, near the village Kharaig, some extremely interesting ancient tombs. These tombs consisted of about 50 pyramids, mostly between six and eight feet high, and six to eight feet square at the bases, the sides corresponding precisely with the four cardinal points. Only two of these pyramids were 16 feet high: one of them was opened, and in the interior a carefully constructed tomb was discovered, with the skeleton of a child and some pearls and corals.

Ancient towers and tombs.

The Trona Lakes, and especially Bahr el Dud, were said to be bottomless, but Dr. Vogel found the depth of the latter 18 feet at an average, and 24 feet where it was deepest. This lake contains the celebrated Fezzan worm or dud. From the drawings sent home by Dr. Vogel, Dr. W. Baird of the British Museum has found it to be a species of the *Artemia* or brine shrimp, and has called it *Artemia Oudneyi*, from having been first seen and described by Dr. Oudney. A full-grown specimen was measured by Dr. Vogel and found to be 3 $\frac{7}{10}$ Paris lines (about a quarter of an English inch) in length, and 1 $\frac{4}{10}$ Paris lines (or about $\frac{1}{6}$ of an English inch) in breadth under the head. They are of a very pretty colour and in their bright hues resemble those of the goldfish. They are caught with cotton nets, in which are hauled up innumerable other insects and flies, with which the lake is filled; the whole is mixed with a red kind of date and made into a paste, which has a smell and taste similar to salt herring, and is eaten by the inhabitants of Fezzan, in place of meat, along with baseeu.

The Fezzan worm or dud.

From Murzuk to Tegerry, 13 Oct. to 4 Nov. 1853.

Dr. Vogel passed the time at that unhealthy place, Murzuk, without indisposition, while nearly all his people and travelling companions were more or less attacked by fever. They left Murzuk on the 13th of October, forming a caravan of 70 camels and about 65 well-armed men, possessing about as many guns. The winter had now set in, that is to say, the heat had slightly decreased—the temperature not exceeding 82° to 85° at noon. But this agreeable change was ushered in with frightful sandstorms, obliterating every trace of the road to such a degree, that only the intimate knowledge of the localities possessed by the Bornuese prince saved the caravan from losing its way. As it was, progress was exceedingly slow and the halts frequent and long, so that by the 4th November only the distance to Tegerry was accomplished. At Gatrone, an intermediate place, the great caravan from Bornu arrived, with 400 to 500 slaves, mostly consisting of girls and boys under twelve years of age, in the most pitiful condition, after a march of 70 days through the desert. The rest of the journey was hoped to be accomplished with the greatest possible speed, so that it is estimated the travellers will have reached Kuka in December last.

* For a complete list of positions, see Appendix.

APPENDIX.

A. DR. OVERWEG'S ASTRONOMICAL OBSERVATIONS.

The following astronomical observations have been kindly reduced by Professor J. F. Encke of the Royal Observatory at Berlin, from extracts made from Dr. Overweg's journals and papers. Owing to the circumstance that a portion of these papers is written in a very indistinct hand, as has already been alluded to (p. 7), and other reasons, Professor Encke is of opinion that for a more complete calculation of Dr. Overweg's observations it would be necessary that he should have the whole of his papers before him. As it is, the learned Professor, in addition to the latitudes, has found only one determination of the longitude complete and entitled to be considered trustworthy. This observation, giving the position of Lake Tsad, is placed at the head of the following list, while the others are arranged chronologically. It may be observed that Dr. Overweg was instructed by Professor Encke in taking astronomical observations, and however much it might have been wished that these preliminary results of his observations were more complete and extensive, they are still valuable in a region where accurate positions are scarce, and where, indeed, all his celebrated predecessors failed in fixing correctly the longitude of a single point. Dr. Overweg's latitudes south-east of Lake Tsad, far beyond Mandara, are particularly interesting.

Island of Belarigo (Lake Tsad), 5 to 21 July, 1851.		13° 26′ 37″	North latitude.
		14 50 0	East long. Greenwich.
Tripoli	1 March, 1850	32 54 43	North latitude.
Mizda	8 April ,,	31 26 35	,, ,,
Taboniah	16 ,, ,,	30 25 57	,, ,,
Wady el Hessi	23 ,, ,,	28 20 15	,, ,,
Wady Ajunjer	31 July ,,	24 14 42	,, ,,
Wady Falesseles	5 August ,,	23 48 28	,, ,,
Well of Isala (S. of Tajetterat)	13 ,, ,,	22 35 2	,, ,,
Tin-Tellust	30 October & 1 November	18 35 24	,, ,,
Amfissa	17 December ,,	18 0 16	,, ,,
Island of Guria (Lake Tsad)	10 July, 1851	13 24 32	,, ,,
Sogoma	6 December ,,	11 57 30	,, ,,
Masa	7 ,, ,,	11 48 45	,, ,,
Kayeta	18 ,, ,,	11 25 43	,, ,,
Borymta	19 ,, ,,	11 23 5	,, ,,
Morom	24 ,, ,,	10 53 55	,, ,,
Barria	27 ,, ,,	10 41 32	,, ,,
Billa malem Yimmabeh	29 ,, ,,	10 18 4	,, ,,
District Wulia	1 January, 1852	10 9 22	,, ,,
Ditto	6 ,, ,,	10 8 38	,, ,,
Ditto	7 ,, ,,	10 18 23	,, ,,
Delaheh	25 ,, ,,	11 41 48	,, ,,
Alla	28 ,, ,,	12 13 5	,, ,,
Marteh	29 ,, ,,	12 22 59	,, ,,
Yedi	30 ,, ,,	12 27 27	,, ,,

B. DR. OVERWEG'S HYPSOMETRICAL OBSERVATIONS.

Dr. Overweg determined the altitude above the level of the sea of many points by Mr. Regnault's hygrometer, an improved instrument for ascertaining the height by the boiling point of water. In the Gharian Mountains very numerous observations were made by the aneroid barometer, and the average elevations thus ascertained have been inserted in the enlarged map of that region accompanying the present work. The aneroid, however, got into disorder when starting to the south, and the observations had to be confined to the hypsometer. These observations were carried on through the Desert as far as the kingdom of Air, when it seems that the two hypsometers were either broken during the pursuits and attacks of the Tuaricks, or actually lost among other things taken away by those robbers. The observations as far as they extend are of very great interest, as being the first ever made in the Great Desert. They demonstrate that the general features of the whole of Northern Africa, from the Mediterranean to Sudan, are those of an extensive tableland, of an average elevation of 1000 to 1500 feet, corresponding with that of Bavaria and other portions of Central and Southern Germany. Out of this tableland rise ranges and groups of hills, of which one of the most striking is an extensive elevated tract immediately to the south of Ghat, which attains at least a height of 4000 feet, to judge from the deep depressions in it which have an altitude reaching 2956 feet. The scale on Mr. Regnault's hypsometers is so minutely divided, that observations made with them may be considered to give a tolerably correct result.

	English feet
Sames	180
Kasr Gharian (three observations)	1696
Mount Toesheh	2212
Wady Gadama	1690
Mizda (three observations)	1018
Wady Mella	808
Wady Talha	800
Wady Tagisha	517
Wady Zemzem	531
Well Taboniah (four observations)	1095
The Hamáda	1394
Ditto	1438
Ditto	1568
Ditto	1432
Wady el Hessi	696
Between Wady el Hessi and Shiati	921
Wady Shiati	710
Wady Nagnaga	857
Wady Tigidafa	921
Wady Gharbi (Ogrefah)	1192
Hill south-west of Ogrefah	1605
Well Sharaba	900
Tessamak	1078
Tasemma	1161
Wady Emenezo	1214
Elauwan (two observations)	1352
Wady Elremut	1829
Plain of Taceta	1296
Wady Talya (two observations)	1435
Plain of Serdalous	1364
Wady Tahala	1349
Kasr Janoon, highest point	2190
Wady Ajunjer	2956
Egangan	2642
Adûs nerrajid	1987
Kirareu	1612
Near Aisou	1273
Selofiyeh	1701
Tin-Tillust	1894

C. DR. VOGEL'S ASTRONOMICAL AND MAGNETICAL OBSERVATIONS BETWEEN TRIPOLI AND MURZUK.

Dr. Vogel being the first professional astronomer of acknowledged talent, who has undertaken a journey to the interior of Africa, his observations are of the greatest importance, and their value will be increased the farther he may be able to penetrate into the Central regions. The following table contains his observations as far as Murzuk, reduced by himself, and dispatched from Murzuk under date 10th October, 1853.

	Latitude North.	Longitude East, Greenwich.	Variation, West.	Magnetic Dip.	Description of Locality and Remarks.
Tripoli	32° 53′ 58″	13° 11′ 30″	14° 20′ 1″	49° 20′ 45″	Garden, 0·15 geog. miles north and 1.30 g. m. east from the Castle.
Beniolid	31 44 22	14 17 15	12 52 38	——	Village of Dahûr Sebâd, about 4 geo. miles east from the Castle.
Enfad	31 27 39	14 57 0	——	——	300 yards west from the well.
Bonjem	30 34 58	15 31 45	12 38 56	——	The Castle.
Sukna	29 4 4	16 18 30	12 41 39	43 22 9	Garden of the Moudir, close to the Eastern town gate.
Godfah	28 50 43	16 8 0	——	——	Well at the foot of the Black Mounts.
Om el Abeed	27 30 48	15 21 15	13 3 8	——	Well.
Gurmeda	27 14 19	15 2 0	——	——	Well.
Sebha	27 2 34	14 43 0	13 22 59	——	
Rhodos	26 26 1	14 38 45	——	——	Village.
Murzuk	25 55 16	14 10 15	13 5 43	38 38 12	English Consulate.
Bimbeja	26 34 48	13 40 15	——	——	Village.
Bahr el Dud	26 42 0	13 44 15			3600 feet long, 1200 feet broad.
Om el Hasean*	26 49 0	13 38 0	(The greater dimensions of these lakes are from west to east)		2 g. miles long, ½ m. broad.
Trona Lake*	26 54 0	13 30 0			About ½ g. m. long, ½ m. broad.
Om el me	26 43 30	13 24 45			1¼ g. m. long, ½ m. broad.
Mandra Lake	26 41 22	13 22 45			1 g. m. long, ½ m. broad.
Djerma	26 25 0	13 8 45	——	——	Town.

* The positions of Om el Hasean and the Trona Lake are estimated only.

D. DR. VOGEL'S HYPSOMETRICAL OBSERVATIONS.

These observations were made by excellent mountain barometers, and compared with simultaneous observations made at Tripoli.

		English feet
Tripoli, English garden		50½
Ainzara, waterpool in the Desert, seven miles from Tripoli		74
Tobras, well, 14 miles from Tripoli		173
Zayagh, well, 27 miles from Tripoli		407
Tarhona Mountains	Mulghra Pass	704
	Hills east from it	1309
	Mulghra Well	1089
	Hills east from it	1529
Mather, about 25 miles from Beniolid		1176
Mi Muhn, Wady, 10 miles from Beniolid		1235
Beniolid, southern edge of the valley		920
Wady Sofejin, 15 miles from Enfad		270
Enfad, well		269
Ditto, hills		412
Wady Zemzem		384
Bonjem		204
Wady Bunayeh, 48 miles from Bonjem		695
Tmad el Tar, well, 15 miles from Sukna		1110
Hills at Tmad el Tar		1350
Sukna		1036
Black Mountains	Godfah, well	1640
	Hills near Godfah	1900
	Pass of the Black Mountains	2065
	Summits of do. 15 m. from Godfah	2160
Desert south of the Black Mountains, about 35 miles from Godfah		1580
Om el Abeed		1360
Desert between Sebha and Rhodoa		1590
Rhodoa		1550
Murzuk, level of the street opposite the English Consulate		1495

E. EXPLANATION OF THE MAPS.

1. Map of Central Africa.

As mentioned in the Introduction to these notes, two maps only were originally contemplated to be given in this work, but the important astronomical and hypsometrical observations of Dr. Vogel, received while these pages were going through the press, prompted the author to add a third map, showing part of Northern Africa on an enlarged scale. It may be at once stated that this, the map of Northern Africa, and that of Central Africa, are drawn on a uniform scale.

The large map, that of Central Africa, first claims a few words of explanation. This map may be considered almost entirely the work of Dr. Barth, not only as based upon his discoveries and researches, but as actually constructed and drawn by himself in the few moments of leisure left him on his journeys in Central Africa. But this sheet, be it remarked, only shows his labours in eighteen months out of four years which he has now unceasingly devoted to exploring those regions. The map now produced is an exact copy of the original drawing of Dr. Barth sent to the British Government, with the only difference that it is drawn on a somewhat larger scale, and that certain additions have been added to it, viz.—

1. Mr. Richardson's route from Tagelai to Ungurutua, laid down from his manuscript journals, kindly placed in the author's hands by Mrs. Richardson.

2. Dr. Overweg's routes to Gubor and Mariadi, on Lake Tsad, and to the south-western provinces of Borna, laid down from his original journals and papers.

3. The Bight of Biafra, with the river running into it, as well as the confluence of the Chadda and Kowara, from the Admiralty surveys.

As I am not aware that Dr. Barth has himself made any astronomical observations, he has evidently based his map on the positions of Kuka, Kano, and Katsina, as assumed in that of Denham and Clapperton, and although these positions slightly differ from Dr. Overweg's position of Lake Tsad, it has been considered preferable not to alter the map on this account, for the following reasons. The difference in the longitude of Lake Tsad between Denham and Clapperton and Overweg is only 17 miles. In the opinion of Professor Encke, Dr. Overweg's position will be found to be correct within one minute of time, or about 15 geographical miles. This and the circumstance that the distance of the island of Belarigo from Kuka cannot be considered as minutely exact, has prompted the author to adjust Dr. Overweg's route to the position of Kuka as taken in Barth's map, according to which the island of Belarigo has been shifted 17 miles farther east than the longitude given to it by Dr. Overweg. These comparatively slight discrepancies will now be definitely settled by the superior observations of Dr. Vogel.

The routes to Kanem and Wulia, evidently laid down by Dr. Barth from his own bearings and distances, agree very satisfactorily with Dr. Overweg's latitudes, the furthest point reached in Wulia being only ten miles different from what it would appear from the celestial observations of the latter. This circumstance bears high testimony to the skill and accuracy of Dr. Barth in laying down his routes without celestial observations. Dr. Overweg's route to Fika has been partly checked by Dr. Barth's route to Yola. The circumference and shape of Lake Tsad may be considered an improvement upon the delineation of Major Denham, though further explorations and a regular survey are necessary for obtaining an exact representation.

A great portion of Dr. Barth's map is, naturally, laid down by him from native information. It must be observed, in order to prevent erroneous impressions, and to assist in forming a just appreciation of the merit of this portion of his labours, that, possessing an extensive knowledge of the various languages, he collected such information with great caution, and digested it with the most careful discrimination and judgment. The difference of native information in that part of the world is quite as great as in Europe, where a peasant, who never left his native village, and a professional or scientific traveller would present no greater contrast than do the great bulk of the natives in Central Africa to the intelligent Mahommedan pilgrim or trader. It was from the most experienced of the latter class almost exclusively that Dr. Barth obtained his information as to the geography of countries he himself did not visit, and he throughout gives the descriptive references of his informants. The position and arrangement of the native routes in Dr. Barth's original drawing have not been altered, but additions to the names and indications of hills, etc., have been made from the descriptions of the routes transmitted.

Respecting the spelling of the names, that adopted by Dr. Barth in his drawings has been adhered to, and altogether it has been the endeavour of the author faithfully to reproduce the map as laid down by Dr. Barth himself. Many now unconnected rivers might have been completed, and other features and information added to make the map fuller, but nothing of the kind has been attempted, in order to leave it what it pretends to be, a preliminary sketch, showing the labours of the Expedition to Central Africa.

The meanings of some descriptive names contained in the map are as follows,—

Komadugu Mayo Ba	river.
Hosére Koséi	mountain, rock.
Rumde	slave village.
Joro Uro	master's or governor's residence.
Ribáu Ribago	governor's country seat.

The original map of Dr. Barth is dated "Kuka, September 1852."

2. General Map, with illustrations.

The general map extends from the Mediterrancan to the Gulf of Guinea, and its object is to give a general view of the routes of the travellers, and the chief features of the countries discovered or explored by them. It is, partly, reduced from the previous map, the dominions of the Fellatas being distinguished by one colour. The other routes, in the upper portion of the map, are chiefly laid down from Dr. Overweg's observations. The astronomical positions of Dr. Vogel were not received in time to be available for this map.

Around this map are arranged various illustrations connected with the subject; first, the portraits of the four travellers composing the expedition;—Richardson, Overweg, Barth, and Vogel. Secondly, sketches of the scenes of their exploits: 1, at the top of the sheet a view of the Roman Ruins at the village Gharecah, on the northern edge of the Hamáda, comprising a well preserved gate-way which stands at the northern side of the village, and is still the only passage to it on that side, the place being surrounded with walls; 2, at the bottom of the sheet a sketch of Lake Tsad with the representation of some of the four-footed denizens of that region; 3, and 4, the side views pourtray the character of the Great Sahara and its inhabitants, the sketch on the left hand side relating to the country of the roving Tuaricks, with Ghat and its serrated hills in the distance, a group of that tribe on their meharis, forming the foreground. The right hand side shows the more peaceful and nomadic life of the Tibbus, with Murzuk in the distance, which place forms the north-western limit of their distribution.

3. Map of Northern Africa.

Dr. Vogel's astronomical observations made on his journey to Murzuk for the first time give the three co-ordinates of the various points of that region,—latitude, longitude, and elevation,—with definite exactitude,* and the author could not deny himself the pleasure of constructing at once this additional map, based upon and showing the labours of Dr. Vogel combined with those of Messrs. Richardson, Barth, and Overweg. Their value and importance will at once be seen by comparison with all previous maps. The mountainous region south of Tripoli is drawn according to Dr. Barth, but the route towards Lake Tsad, by the Hamáda, Murzuk, and Ghat, is laid down from Dr. Overweg's Journals. From the numerous hypsometrical observations of Dr. Overweg and Dr. Vogel the author has been enabled to construct three sections, which are the first that relate to that vast portion of Africa which extends from the Mediterranean to the Cape Colony, and from the Nile and the Indian Ocean to the Atlantic shores. Other physical features, referring to the Geology, Botany, and Zoology of the region, are also indicated in the map as far as the scale would admit. Altogether this map will give a more correct idea than the others as to the scope of the labours of this expedition, and the information that may be expected when they shall be laid before the public in an unabridged extent.

F. ON THE RESULTS OF THE EXPEDITION GENERALLY.

The best and most correct idea of the results already gained by the expedition will be found, by comparing the maps of the present work with those published by their immediate predecessors, namely, those illustrating the travels of Denham and Clapperton. First, a large portion of Northern Africa and the Sahara, never before visited by Europeans, has now for the first time been thoroughly explored. The discoveries in the country of the Tuaricks, comprising the kingdom of Air in particular, form a considerable addition to our geographical knowledge of Africa. But the great achievements lie within Sudan, in the vast region between Gubor and Mariadi in the West, and Dar For in the East, and ranging from the 15th parallel as far south as 5° north of the Equator. The important discoveries of Denham and Clapperton, it must be borne in mind, were as yet confined to a region of which a great portion was known and mapped with some amount of truth before them, according to the information possessed by the Roman, Egyptian, and Arab geographers, whereas the whole region beyond the points reached by Denham, Clapperton, and Lander, presented a great blank, save some vague indications only, as for example the existence of a country called Adamaua. Except Mandara, no Pagan country to the south of Lake Tsad had ever been reached by any European before Barth and Overweg, and the merit of pioneering into these totally unknown regions belongs exclusively to them.

The actual extent of the routes accomplished by these travellers has been calculated from the present maps, thus:—

	Geographical miles.	
Routes in map of Northern Africa	1400	(as shown by the three sections)
	530	(not represented in the sections)
Ditto in map of Central Africa	3050	
Ditto in general map, not contained in the enlarged maps	820	
	5800	geographical miles.

This only comprises the journeys of Dr. Barth up to August 1852. The extent of the routes actually performed, viz., 5800 geographical miles, will be better appreciated when compared with other recent travels, as for example those of Mr. Galton in South Africa, the routes of which only amount to 1280 miles. The whole distance, in a direct line, from Tripoli to the Cape of Good Hope, is only 4080 miles.

But the mere linear extent of the routes of their explorations would convey an inadequate idea of the importance of their labours. It is the value of their astronomical, hypsometrical, and geological observations, the extent of their historical, philological, and ethnological researches, which the writer confidently believes, will form a new era in the geography of the whole of Northern and Central Africa. And if the navigableness of the river discovered by Dr. Barth is such as is anticipated, a new era will also, it is hoped, dawn upon the regeneration of Tropical Africa, with its social questions, the questions of slavery and the introduction of Christian religion, civilization, and commerce. The results of the long intercourse of the travellers with the chief ruling nations of that part of Africa,—as the Tuaricks, the Fellatas, the Bornuese, as well as various Pagan tribes,—will enable the statesman and philanthropist to ascertain in what quarter and by what means this regeneration of Africa may be best wrought.

* The position of Murzuk and other places as given by Oudney, Denham, and Clapperton, differing above 100 miles from those of Lyon and Ritchie, the author, in order to ascertain which of the two results was the most trustworthy, addressed, upwards of two years ago, a letter to Admiral W. H. Smyth, from whose answer, dated 10th October 1851, it appears that not one of the five travellers could determine a longitude "respectably", and that, consequently, not one of their positions is correct. It is necessary to make this statement, without in the slightest degree wishing to undervalue the important labours and discoveries of those travellers, as their works contain no explanation respecting their celestial observations, and as only Admiral Smyth is able to decide this point, he having not only personally known all the said travellers, but taken an active part in their journeys, as well as materially assisted in the publication of their journals. That officer, indeed, drew up the map illustrating Oudney, Denham, and Clapperton's travels; and he is, in point of fact, the originator of their journeys.

Those interested in the History of the Geography of Africa and the exploration of its Interior, should refer to that most important work, just published,—"The Mediterranean, a Memoir, Physical, Historical, and Nautical, by Rear-Admiral William Henry Smyth, K.S.F., D.C.L., etc., etc., etc., London: Parker, 1854."

ERRATA.*

Page 1, introduction, line 27, for *18th June*, read *28th June*.
„ second column, from the bottom, line 5, for *Mokun*, read *Mokne*.
2, first column, line 19, for *2000 to 2500*, read *1400 to 2000*.
6, second column, first side title, for *Kuku*, read *Kano*.

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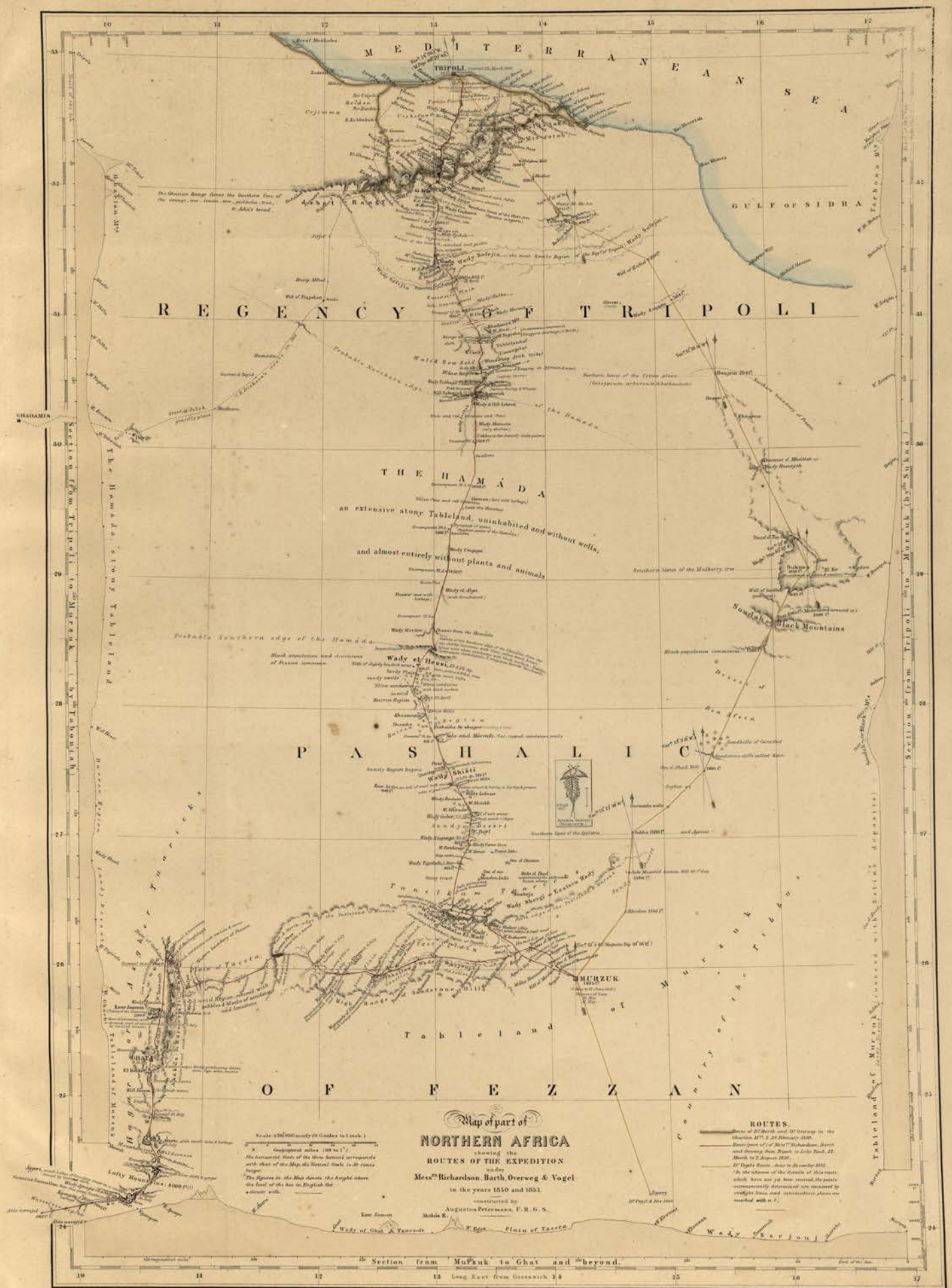

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